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## CAPTIVE BREEDING OF THE LESSER GREEN BROADBILL

By Ed Lewis (San Diego Zoo, San Diego, California, U.S.A.)

The Lesser Green Broadbill *Calyptomena viridis continentis* is the most well known species in the Eurylaimidae family. These are deep forest dwellers of the Old World Tropics ranging from Southern Burma, Thailand to Malaysia; Sumatra, Borneo and some of the adjacent islands. Both sexes have short stout bodies with wide flat bills. The males are iridescent emerald-green with black above the eye and behind the hind cheek. The primaries and secondaries are barred in black. There is a short crest that extends over the long wide bill. The female is similar but more drab in colour and lacks the black markings.

The Zoological Society of San Diego has maintained Lesser Green Broadbills in its collection since August 1964. However, it was not until August 1992 that any attempt at breeding was observed.

This particular pair of Broadbills along with a pair of Pompadour Green Pigeons *Treron pompadora* and a single Striated Yuhina *Yuhina castaniceps* were housed in an outside enclosure measuring 3.7m x 6m x 3m. The rear wall is concrete with two doors leading into anti-rooms used as keeper access. The back 75 centimetres is covered by a concrete roof, while the rest of the enclosure is covered with 1.3cm x 2.5cm 12 gauge galvanised welded wire.

The enclosure was rather thickly planted with a variety of tropical flora with several large *Tupidanthus* sp. dominating the landscape. Other plants in the exhibit included *Raphis humilis*, *Cassia* sp., and *Phyllostachys aurea*.

The diet of the birds in the enclosure consisted of a diced fruit mix, (apples, papaya, grapes and boiled long grain rice), a slice each of banana, papaya, and avocado, crickets, mealworms *Tenebrio molitor*, wax moth larvae *Galleria mellonella*, soaked Purina Hi-Pro dogchow, and Zeigler Low-iron pellets. Blair's Super Preen powered vitamin/mineral supplement was sprinkled on the diet.

During August of 1992 to August of 1993 the Lesser Green Broadbills nested three times.



### Nest 1

On August 21, 1992 at 16.30, the hen was observed approximately 2 metres high under the concrete roof in an artificial nest. The nest they chose was a domed woven basket measuring 18 cm high and 12cm deep. Shortly after being noticed, the female flew from the nest to perch beside the male. The male began to "head bob" and vocalise, after which, the female flew to another perch.

The next morning the hen stayed in the nest until 11.47 at which time the nest was inspected and one oval white egg was observed. The female returned to the nest approximately 10 minutes later. At 15.47 the female left the nest and bathed in the water pan. After fluffing and preening for several minutes, she began bobbing her head and calling. The male answered. They called back and forth and changed perches several times. Twice the male came down to the perch beside the female, both head bobbed and vocalised. The female opened her mouth towards the male, then vocalised more and the male flew away. This happened twice within the hour that the female was off the nest.

On August 23 at 11.30 when the hen left the nest two eggs were observed. It was decided at this time to minimise all disturbance to the enclosure. On August 25, video equipment was installed for observation and recording of the nesting activities.

Through direct and video tape observation, it was observed that only the female incubated the eggs. The male was never seen at the nest. The male did, however, continue to vocalise and would occasionally try to approach the female when she would leave the nest. In contrast to the period before egg laying, the female was not receptive to his approach and would immediately fly away.

On September 8, the hen was off the nest at 7.30 the nest was inspected and 1 chick and 1 egg were observed. There were no eggshell fragments found in the nest or on the exhibit floor. At 8.49 the female was hanging on the side of the nest basket feeding the chick.

A second video camera was installed in order to monitor the food pan more accurately for the specific food items that were being taken during the chick rearing process.

The morning of September 9, revealed 2 chicks - one twice the size of the other. The food pan and the nest were observed for a total of 10 hours during which time the female was observed feeding the chicks 18 times. There were a total of 21 visits to the food pan. Eight times avocado was taken, 5 times fruit mix, 3 times wax moth larvae, once dog food, and there were 4 visits in which nothing was taken.

Throughout the day of September 10, both chicks were visible and exhibiting very strong feeding responses whenever the female would land on the nest. 22 feedings were observed from 07.15 to 18.30.

The next day, however, there was only one chick visible when the female would feed. The previous day's video tapes were reviewed in detail and upon very close scrutiny it was observed that at approximately 17.30 the female seized the smaller of the two chicks in her mouth and appeared to strangle it. Surprisingly, the chick was not only active and exhibiting a strong feeding response just prior to this, but also appeared to struggle against the attack.

After the chick ceased struggling, the hen flew off with the body. Approximately 30 minutes later the hen returned to the nest and fed the remaining chick after which she entered the nest and began to brood as before.

The next three days proceeded with regular feeding and brooding of the remaining chick. However, on September 14, there was no feeding activity at the nest. Upon inspection the body of the chick was discovered on the ground approximately 2 metres from the nest. The video tapes did not render any new insights into this assumed second genocide.

Reviewing the video tapes of the food pan revealed that the item most taken during the six days in which the female was feeding the chicks was avocado. Second, was insects with a preference for wax moth larvae and mealworms over crickets. The diced fruit mix was third in frequency with the soaked dog food only occasionally taken. Banana and papaya slices were not eaten from at all.

## Nest 2

April 13, 1993, the female Broadbill was observed building a nest about 1 meter off the ground in a *Tubidanthus* using strands of Spanish moss *Tillandsia usneoides*, bamboo leaves *Phyllostachys aurea* and goat hair. The female would carry the material to the water pan and soak it before taking it to the nest site where she would drape the long strands over the limb. After there was a large pendulous mass she would hang on the strands circling around and around probing and tugging as she interwove the fibres.

By the 18th, the integrity of the nest was in question, so the same type of woven basket as was used previously was placed in the nest mass. The female was not disturbed by the manipulation. As she continued her own additions, she eventually probed into the nest basket entrance. It was not long before she was inside the basket lining it with bamboo leaves.

On April 26, two eggs were observed in the nest. A third egg was laid on April 28 at which time the female began to incubate consistently, rarely leaving the nest. When she did leave the nest during the day, she would usually bathe before returning. This continued throughout incubation.

Since the male was not observed participating in any of the nesting or chick rearing activities, it was decided to remove him in case he was

interfering in some unobserved way with the chick rearing process. On May 7, the male was trapped in a catch cage and removed from the exhibit.

After a 17 day incubation period, two chicks hatched on May 14. The chicks were orange with flat heads and yellow edged beaks. The female was observed hanging on the side of the nest and feeding the chicks after eating avocado and fruit mix.

On day 2 it appeared that the chicks were being fed mostly waxworms and avocado. By day 5, the order of preference for food items was waxworms/avocado, mealworms, crickets, mega worms, and then mixed fruit. This remained consistent throughout the rest of the chick rearing process.

On May 17, the 3rd unhatched egg was pulled and found to be infertile.

On May 21, there was only one chick in the nest. At 8 days, this chick was becoming more grey in colour with two dorsal feather tracks appearing. By May 24, the chick was large enough so that it was difficult for the hen to enter the nest and brood. At 13 days, the pin feathers started to break open in the scapular, dorsal and rump regions. On June 4, at 22 days, the chick fledged weighing 51 grams. Its overall colouring was dull green with a light-grey green breast. Its beak was horn coloured with a black tip and yellow edges. Pin feathers were still visible on its head and the tail was very short.

From the onset of incubation the female rarely vocalised, however, at fledging, the hen very frequently called especially before and after feeding the chick. The chick, on the other hand, was rarely heard vocalising at any time. All seemed to be going well until the chick died at 28 days of age from head trauma sustained from a female Striated Yuhina.

### Nest 3

June 10, the male was reintroduced into the exhibit and the two began to call back and forth and head bob immediately. By June 22 the female was engaged in intense nest building in the same location as the previous nest.

In order to minimise the possibility of future mishaps, the Striated Yuhina and the Pompadour Green Pigeons were removed from the exhibit.

Once again a nest basket was added to insure the integrity of the nest. However, because the original basket seemed to be too small for more than one chick, a larger basket was used. This basket was made by forming a domed basket of *Trachycarpus fortunei* palm fibres around an inflated balloon. The fibres were adhered together with 3M super 77 spray adhesive and the balloon was deflated and removed. The approximate dimensions of this basket were 25 cm high and 16 cm deep. Again the female accepted this addition without hesitation and was soon lining it with bamboo leaves.



On July 2, the first egg was laid with two subsequent eggs laid on July 3 and 4. The measurements were as follows:-

	Width	Length	Weight
Egg 1	20.85cm	28.20cm	.26gms
Egg 2	20.85cm	28.05cm	.95gms
Egg 3	20.95cm	29.20cm	.45gms

On July 15, the male was removed from the exhibit and the first egg was pulled to be artificially incubated.

On July 22, after an 18 day incubation period, all three eggs hatched: one late morning, one mid afternoon, and one in the evening. The artificially incubated chick died at 2 days with a bacterial infection. The two chicks in the nest appeared to do well. At 7 days their eyes were just beginning to open.

On August 13, one chick fledged at 22 days weighing 54 gms. The other chick fledged two days later at a weight of 44gms. The hen continued to feed the chicks until they were approximately 49 days old. At 70 days of age, the chicks were taken from the exhibit and placed in an off-exhibit holding enclosure. The weights of the young were 70 gms and 62 gms. The two birds were sexed by size and weight. The larger, heavier bird being a female, and the smaller, lighter bird a male. This was later determined to be accurate by adult plumage.

## Summary

Even though this is far from a consistent breeding programme, I would like to offer the following as a summary of important information gathered from this particular pair of Lesser Green Broadbills:-

- 1) Manipulation of the nest is possible to ensure better integrity.
- 2) The male does not participate in incubation or chick rearing and may be a source of disturbance to successful chick rearing. Thus it is recommended to remove the male after incubation has begun.
- 3) Preferred food items during chick rearing are avocado and wax worms with mealworms, crickets, mega worms and mixed fruit. Occasionally soaked dogchow was also taken.
- 4) Eggs were laid every day for a clutch of 2 - 3.
- 5) Incubation is 17-18 days. Incubation begins with the last egg.
- 6) Chicks fledge at 22 - 24 days of age and are not independent until they are approximately 7 weeks old.

## BREEDING THE TOUCAN BARBET AT THE TROPICAL BIRD GARDENS, RODE

By Paul Sherbourne

The Toucan Barbet *Semnornis ramphastinus* comes from western Columbia and central Ecuador. It is one of the larger Barbets being 20 cms long. It has a heavy bill (hence its name) that is yellowish green with a black tip. Forehead, crown black, black crown bordered laterally by a broad white stripe. Feathers of the hind crown elongated so as to lie over mantle, shining black (also note cock's are longer than hen's). Sides of head, ear coverts, sides of neck, throat and breast blue-grey. A broad band of scarlet across the breast this colour somewhat staining the centre lower breast and upper abdomen (ours have turned yellow). Back olive brown with greyish wing and tail.

It has long been one of those birds that are much sought after. Importations are infrequent. Winged World are credited with the first breeding in Great Britain in 1972, and this was reported in the Avicultural Magazine. As far as I know the following account is the first success since. Mike Curzon has told me that as these birds occur in the hills, a tropical house is probably not the best place to keep Toucan Barbets. As we have no tropical house here at Rode the birds have had plenty of fresh air and our variable English climate.

Early in the spring of 1993 Rode were offered three Toucan Barbets, a cock and two hens, with one of the hens dying later in 1993 for no apparent reason. These birds had been part of a confiscated consignment and H.M. Customs and Excise sold to Rode the Toucan Barbets. Since that time the colour of the parents has faded somewhat. The three Barbets were kept inside for two weeks and sorted themselves out into a pair and an odd hen. Their food is generally banana, apples, grapes, some meat and seasonal fruit which goes into the food mixer. Live food was almost ignored as was Orlux softbill food. Their food was dusted with SA37 vitamin supplement.

In 1994 the birds nested and although a long time elapsed no youngster appeared. Their accommodation from the start was an aviary, 3m at the back and the front having six sides none of which is the same measurement ranging from 89 cms to 139 cms. There is a shed on the western side (the aviary faces south) being 83 cms high x 28 cms deep x 58cms long with a shelf half way up for feeding. The shed is 49 cms off the ground. The aviary has laurel and flowering currant (golden leaf variety) with a grass/earthen floor.

Early in April there was a lot of calling, the cock hooting, then the hen, then the cock and so on. Excavation took place in a newly installed log.



On 16th April both birds were quiet and it was thought that the hen must have laid. I would only keep looking to see that all was well and not interfere with the nest. On 13th May I noticed that more food was being taken. Incubation was done mainly by the female. Mating wasn't observed, and I saw no material being taken into the log. Nest inspection didn't take place and will not be done until we have further successes. By 19th May I could hear a chick in the box. Food intake was increased. When I went into the aviary the cock would call the hen out of the box. When offered live food (mealworms) she returned to the box. All went well and on 25th May a single chick fledged. It was smaller than its parents with dark eyes. The parents eyes are red outside with a black pupil. The young bird was a duller colour than its parents. There was a small pony tail and it has moulted into a cock.

The hen nested again so the youngster was taken away and put in an off show aviary where Donald Risdon used to keep a few favourite birds. As the bird grew older live food intake was reduced and more fruit eaten. At the time of writing (November) live food in minimal.

He particularly liked bright red-coloured fruits like strawberries and cherries, but also took raspberries and blackberries, It would have been interesting to have had winter fruits like holly berries at the time of nesting.

At first the parents bathed a lot but now they prefer to sit in the rain. They appear to drink little if anything. Nectar has not been offered. They enjoy peanuts and sunflower seeds in the winter only. They took elderberries from bushes planted outside their aviary. They would catch live food when it entered their flight. They took some of the plague of wasps that were here at Rode in this summer of 1995. The only other occupant in the aviary was a single cock Grey Francolin, which subsequently died. The nearest aviary contained a pair of Red-winged Starlings. The youngster roosts, incidentally, in a finch-type next box i.e. half open fronted.

The Toucan Barbets are very popular with all our visitors, but especially with those who are envious of us having a pair. The major problem with the bird is the limited number that are imported. We would very much like to hear from anyone who has or knows the whereabouts of other Toucan Barbets so that a concentrated breeding programme can be undertaken.

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## OBSERVATIONS ON THE BREEDING OF THE WRINKLED HORNBILL AT CHESTER ZOO

By Roger Wilkinson, Wayne McLeod, Darren Langford  
and Roger Merry

Wrinkled Hornbills *Aceros corrugatus* occur in the coastal lowland forests of Malaysia, Sumatra, and Borneo. They are now extinct or close to extinction in peninsular Thailand and scarce in Borneo. Whilst still relatively common in Sumatra, they remain under threat from logging and deforestation (Collar et. al. 1994, Kemp 1995). Of seven species of threatened Hornbills listed in the 1990 IUCN Red Data Book, only the Wrinkled Hornbill is held in European collections and should be a priority for conservation breeding (Wilkinson 1992).

Chester Zoo received a pair of Wrinkled Hornbills on 21 December 1986. These were confiscated birds received on loan from HM Customs & Excise. The pair were housed for their first winter in the Tropical House, then moved to larger quarters in the Bird House where their aviary measured 6.2m x 3.0m x 5m high. The Hornbills were provided with a nesting barrel 100cm high x 68cm diameter with an elliptical entrance hole 21cm high x 17 cm wide positioned just above the widest part of the barrel. The barrel was filled with freshly composted bark.

In 1990 the birds made their first breeding attempt with the female sealed in the nest barrel by 30 June. The female removed surplus bark to a level just a few cms below the nest entrance and sealed the entrance with a mixture of clay, faeces and food. During the early part of incubation the male provided the female with clay to complete this task. She emerged on 7 September without any sign of eggs or chicks.

In late April 1991 the female again began sealing herself inside the nesting barrel and completed this task in early May. From observations of increased feeding activity it was suspected that eggs were hatched in the middle of June but on 15 July two dead naked chicks were found thrown out of the nest, one partly decomposed and the other more recently dead. On 26 July the female broke out of the barrel ending this second nesting attempt.

The nest barrel was then modified in the winter of 1991/1992 by the addition of a removable side panel to permit keeper access if required. In mid-June 1992 three chicks were hatched. One of these was thrown out of the nest at less than a week old, and the two others survived until 1 August. The Wrinkled Hornbills nested earlier in 1993, and a chick that hatched around 4 May was found dead on 21 June. Nest inspection then also revealed an addled egg which measured ca. 58 x 37 mm. In both 1992 and 1993 the

chicks were well grown and estimated as six to seven weeks old on death. A post-mortem on the 1993 chick indicated pneumonia resultant from a pasteurella species as the cause of death.

The Wrinkled Hornbills diet at this time comprised a variety of fruits including diced apple, pear, tomato and grapes sprinkled with insectivorous/meat mix, soaked Zoo Food A, and, whilst feeding chicks, large numbers of garden snails which the adults took in preference to other food items. Because of concern that these snails may not have been disease-free, it was decided to discontinue their use for future breeding attempts.

Over the winter of 1993/1994 major changes were made to the nesting barrel by the removal of most of its top and the addition of a "chimney" structure of similar size to the barrel to form an escape- or funk-hole for the female if it became necessary to inspect the nest during her incarceration. These changes followed the recommendations of Poonswad et. al. (1987) and have more recently also been suggested by De Ruiter (1994) and Kemp (1995). This may have unsettled the hornbills as for the first time in five years the birds showed no inclination to breed in the summer of 1994.

The birds were moved to new and warmer quarters in the Tropical House in autumn 1994 where the newly constructed aviary measures ca. 6.0 x 4.0 x 5.3m high. A nest barrel was obtained that had its opening slightly below the widest part of the barrel. This was designed to permit the female to easily void her excreta outside the nest. The barrel was fixed on a supporting framework then encased in a concrete material to simulate a tall rainforest tree. The barrel measured 85 cm high x 60 cm at its widest diameter, with an entrance slit of 25 cm x 13 cm wide some 3.4m above the ground.

On 6 March 1995, both male and female Wrinkled Hornbills were seen spending time inside the nest barrel. By 22 March the female was spending all her time inside the barrel and had almost completed plastering up the nest entrance. The hornbills were offered a variety of fruits including apple, pear, banana, tomatoes, grapes and occasionally honeydew melon and kiwi fruits, soaked Zoofood A and also locusts, pink rats and large morio worms throughout this period. Fresh figs and avocado pear were also offered but refused by the hornbills. The diet was supplemented with SA 37, Stress, bonemeal and powdered cuttlefish. On 3 April, the male was first noted eating pink rats and by 1 May the large quantity of live food being taken (15 pink rats, 35 large locusts and two handfuls of morio worms) indicated that chicks were being fed. The appetite of the birds for live food became difficult to meet as the amount of animal food was increased daily.

By 30 May, the birds were taking 70 pink rats, 40 large locusts and four handfuls of morio worms in addition to fruit. On 2 June, the bills of two chicks were first seen reaching up to take food from the female. The



male always fed the female directly and she then regurgitated the food to the chicks. This was extremely laborious and time consuming as the male would fill its throat pouch swallowing the food items one at a time and then fly up to the nest barrel and individually regurgitate each item before passing it to the female. Observations on 18 June, suggested that there may be three chicks in the nest and this was confirmed on 1 July, when three chicks were seen begging from the female. On 11 July, after one hundred and eleven days in the nest the female finally emerged with three well grown youngsters. At that time it became evident that in fact there was a fourth chick and the final chick fledged on 14 July. The youngsters appetite for animal food continued after fledging but this was gradually reduced as greater and greater quantities of fruit were fed. One youngster broke its upper mandible as a result of flying into the enclosure wire. Rapid veterinary intervention was then necessary to rejoin the pendant tip to the main part of the bill. The bird soon recovered and was one of the first chicks to begin to feed itself. No chicks were seen to attempt to feed themselves until over a month after fledging and two were still being fed by their parents in early December, nearly five months after leaving the nest.

On fledging, all four chicks resembled the adult male in having white neck and facial feathers. In the smaller adult female these feathers are black. Adult males also differ from the adult females in having larger, more brightly coloured bills and yellowish, rather than blue gular pouches. One of the four chicks was clearly larger than its nest mates and some four months after leaving the nest it also showed development of an orange casque. This proved to be the only male of the brood. There are presently more unpaired females than males in Europe so we must hope this ratio may change in future breedings.

Successful captive breedings of Wrinkled Hornbills have now been reported from a number of collections including Miami's Metro Zoo, New Orleans Audubon Park and Zoological Garden, and Kuala Lumpur. The first European breedings were at the private breeding station of Vogelpark Walsrode on Mallorca in 1992, then at the breeding centre of Palmitos Park on Gran Canaria in 1993 (Low, 1994).

The normal clutch size for Wrinkled Hornbills is two to three eggs. Four clutches from the same female at Audubon Park were all of three eggs (Sigler & Myers, 1992). Successful captive breedings that have been reported all indicate one or two chicks being reared. This is the only case to our knowledge in which four chicks have successfully been reared. Keeping up with the huge appetites of the youngsters by providing unlimited quantities of live-food may well be the most important factor in the captive rearing of Wrinkled Hornbills. Chester Zoo's success is believed to be a first breeding in the United Kingdom.

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As described above the Wrinkled Hornbill *Aceros corrugatus* was bred by Chester Zoo in 1995 and this is believed to be the first success in this country. Anyone knowing of a previous breeding in Great Britain or Northern Ireland, or of any other reason that would disqualify this claim, is asked to contact the Hon. Secretary.

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## BREEDING THE BLACK CRESTED GUINEAFOWL AT BIRDWORLD

By Paul Wexler

There has been confusion for what seems quite a long time as to where the Black-crested Guinea fowl should be placed taxonomically in relation to their own family. It was previously considered that the genus *Guttera* and other species was split into two distinct groups, the Kenya Crested Guinea fowl *G. pucherani* and the other species recognised as simply Crested Guinea fowl *G. edouardi* with morphological variations. The genus is now best considered to form a single species with well marked subspecies (Elliott). Five subspecies are now recognised.

The subspecies kept at Birdworld is *G. pucherani edouardi* native to Eastern Zambia, Mozambique to North East South Africa, four specimens of which have been with us since late 1992. Initially the two pairs were kept separate and housed in aviaries next to each other though there was no direct contact. This was done primarily because we were unsure of how aggressive pairs would be if they were mixed. The diet given to these birds consisted of a dish of Pheasant pellets, and added to this is chopped fruit, a ration of soaked Avi plus softbill food, minced beef, and live food and vitamins.

In July 1993, however, the pairs were moved to a new under cover flight and allowed to run together. They proved to be quite tolerant and were left as a group throughout the winter and the 1994 season. This provided a minimum level of interaction between the birds which was hoped might lead to breeding, but unfortunately this was not to be. The two pairs did move as a loose flock, but within this the pairings were easily recognisable, with cocks staying relatively closer to their own hens and vice versa.

By May 1995 it was thought reasonable to try another move and so this time the birds were moved into one of our large, grass floored Hornbill flights. Extra feeds were given to the Guinea fowl in the form of whole water melons and aubergines put in to the flight to allow them to feed a little more naturally. Peanuts were also scattered in the aviary three afternoons a week and a few handfuls of mealworms thrown in each evening. All offerings were equally well relished.

Within fifteen days of being in the new aviary three eggs were picked up from a ground scrape hidden in a tangle at the base of a old ivy stand. They were taken to the Incubation Research Station, where they were cleaned and incubation commenced. One more egg was found the day after (12.06.95) after which there was a ten day break before one more egg was

produced. Then four days later a run of four eggs were laid with two days between each. Each egg was incubated as it was picked up, which produced a staggered hatch.

The incubation period averaged 25 days and was relatively straight forward being similar to the incubation of their long domesticated cousin the Helmeted Guineafowl and culminated with 88% hatchability from 100% fertility. Of the nine eggs produced their measurement averaged 5.82cm for length, 4.36cm for width and 47.17 grams in weight.

The rearing of the chicks was also quite simple as they hatched in close succession to each other and therefore each chick had company with which they could feed and rest. This is far more natural than chicks being reared singularly. The chicks by nature of their production were started as two distinct groups, four in each. Both groups were firstly placed into a small wooden rearing box 30cms x 45cms x 38cms high with a dimmer controlled 60 watt bulb for heat.

Food given at first was a dry game bird rearing food, finely chopped fruit and white mealworms. The mealworms were offered with tweezers initially, but this tended to cause a panic between the groups and therefore was stopped. This meant we did not see the chicks feeding. The food was indeed being taken, particularly the live food which was dropped into the boxes at intervals throughout the day.

After a week or so, because of the limited space in the rearing boxes, we moved the birds into heated cages, which measured 75cms cubed. This is a normal procedure for us when rearing Pheasant types, but usually the move is only made when chicks are three to four weeks old. Even at this young stage the four chicks in each group coped well and remained in the same accommodation until they were four weeks old when, because of their increasing size they needed to be moved again.

At six weeks old the eldest group of poults, which seemed relatively slow growing compared to Pheasant poults of a similar age, were moved once more into an on show flight accompanied by a pair of Rufous Treepies *Dendrocitta vagabunda*.

A young Peafowl chick of a similar size was also mixed with the group of Guineafowl with no adverse reaction from either species. Two weeks later the second group were mixed with their older siblings, again with no obvious problems. However after two days of apparent harmony, one of the youngest group was found dead. It seemed unlikely that the Treepies would have killed a bird of such a size though the poult certainly bore the marks of their feeding behaviour. It was noticed after watching the group for a while that the perpetrator was in fact the young Peafowl which was seen pecking at the head of another small Guineafowl. Removal of the Peafowl solved this problem, and all was well again for a further six or seven weeks.

The real problem occurred at this stage from intestinal worms and although they were treated regularly, we could not, it appeared, control reinfestation. Food was increased to try and combat the infestation and although the birds had good appetites, the problem could not be controlled. Three birds were lost before the medication began to work and as an extra precaution the remaining four were moved back inside and given additional heat. These remaining birds outwardly appeared well for a short period before two more were lost from another reinfestation of worms.

Two birds, both cocks, survive and like their siblings look fit and well, though we will need another good season to produce hens if we are to create new unrelated groups.

As youngsters these Guinea fowl moved naturally like small flocks, moving to food or cover or simply investigating whatever took their interest as a group. They retained their juvenile appearance in so far as their heads remained striped, until fifteen or so weeks though the body plumage came through with the white spotted blue feathering of their parents from three weeks.

A small number of the Crested Guinea fowl are still present in various UK collections. The main problem, however, being that those present are remnants of old groups and unfortunately differing sub species from our own. Birdworld would therefore be interested in hearing from any keepers of *G. p. edouardi* who would be interested in swapping for new blood so that this sub-species can be propagated successfully in years to come.

## Reference

ELLIOTT, A., DEL HOYO, J., SARGATAL, J. *Handbook of the Birds of the World, Volume 2.* (1994) Lynx editions, Barcelona

As described above Black-crested Guinea fowl *Guttera pucherani edouardi* was bred by Birdworld in 1995, and this is believed to be the first success in this country. Anyone knowing of a previous breeding in Great Britain or Northern Ireland, or of any other reason that would disqualify this claim, is asked to contact the Hon. Secretary

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## EARLY WEANING OF HAND-REARED FLAMINGO CHICKS AT THE NATIONAL ZOOLOGICAL PARK

By Sarah Hallager, Keeper

American Flamingos *Phoenicopterus ruber* have been exhibited at the National Zoological Park (NZP) in Washington D.C. since 1899. However, breeding did not occur until 1992 when one chick which hatched was parent reared but did not survive. In 1993 a chick did survive to adulthood. Due to parental neglect, this chick was pulled for hand-rearing. Similarly in 1994, two more chicks were hand-reared after their parents abandoned them, and in 1995 when four abandoned chicks were hand-reared. As of yet, the reasons as to why the parents are not properly rearing their young are not clear, but this has led to the discovery of less intensive hand-rearing methods.

In the wild, Flamingos are generally weaned at about the time of fledging at 75 days (Ogilvie, 1986). In captivity however, hand-reared young have tended not to be weaned until much later. San Antonio reported one chick hand-reared in 1981 was not weaned until it was 126 days old (Kunneman and Perry, 1990). Similarly, the first chick hand-reared at NZP was not weaned until it was 95 days old. However, the two chicks pulled for hand-rearing in 1994 and all four of the 1995 hand-reared chicks began self feeding anywhere from 21 - 26 days of age, and by 31 days of age, were completely weaned.

All chicks pulled for hand-rearing were tube fed the diet developed at the San Antonio Zoo. None of the chicks were younger than six days old when removed from their parents, so feedings were initially made four times a day beginning at 7.00am and ending at 5.30 pm. All chicks were weighed prior to the first feeding of the day to monitor weight changes and to ensure that daily weight gains did not exceed 10%. A consistent weight gain in excess of 10% can lead to leg and wing deformities.

Regardless of age, food was made available to a chick as soon as it was pulled for hand-rearing. Chicks, even at six days of age will investigate a bowl of food out of curiosity. They are unable to filter feed at this age, but will pick up and eat food items offered. In addition to the tube feeding, chicks were offered the same pelleted diet that the adult flock was fed. Although the adult birds were being fed Ziegler's Flamingo breeder at the time the chicks were pulled for hand-rearing, the chicks were offered the maintenance diet (Ziegler's Flamingo Fancier) which has a lower calcium and protein content. Too much calcium or protein can lead to growth problems. Dry pellets were offered but the chicks preferred the pellets slightly moist as it appeared easier for them to pick up. Fresh water was available at all times.

At two weeks of age, hand feedings were reduced to three times a day, beginning at 7.00am and ending at 3.00pm. Pelleted food was still available to the chick at all times. At the first sign of self feeding, anywhere from 22 days to 25 days, the mid-day feeding was eliminated. Over the next two to three days, one hand feeding per day was eliminated so that generally three days after first observing the chick first eating on its own, the chick was weaned.

Once the chick was no longer receiving hand feedings, its weight was still monitored daily to ensure that it was indeed consuming enough food to maintain itself. It was also important to monitor weight to ensure that daily gains did not exceed 10%. If a chick had lost weight, hand feeding would have been resumed. However, once a chick began eating on its own, it always ate enough to acquire the needed weight gains and the resumption of hand feeding was not necessary.

Once weaned, presentation of the food become of utmost importance. Food was placed in a crook which was placed in water in a small cement pool. Fresh water was maintained in the pool at all times. The chicks tend to dribble water onto the food after eating, so the food must be replaced several times a day to maintain the correct consistency so that the chick can pick it up.

Early weaning of Flamingo chicks seems to be facilitated by rearing several chicks together. The single chick reared in 1993 was raised by itself. Six Green-winged Teal *Anas crecca* were placed with the bird for company, but weaning did not occur until the chick was 95 days old.

Even though early weaning was not expected in 1994, the two chicks had food available to them from the day they were removed from the flock at ten and six days respectively. The older chick was first observed eating on its own at 29 days and at 32 days was weaned. The two chicks were always together in their enclosure and this seemed to influence the younger chick. It began self feeding at 23 days and was weaned at 25 days of age.

Encouraged by the early weaning of the 1994 chicks, the 1995 chicks were also provided with food upon removal from the flock.

The first chick pulled for hand-rearing was weaned at 28 days, and the second chick was weaned at 25 days. The third and fourth chicks were weaned at 31 days and 28 days respectively.

Early weaning has not posed any health or growth problems for any of the six chicks that have been weaned by one month of age. While the hand-rearing diet developed by San Antonio Zoo is designed to feed a chick from day one until weaned, chicks at NZP developed no difficulties associated with discontinuing the hand-rearing formula at an early age.

Even though the chicks have been with their parents the first six to fourteen days of life, they accept their caretakers soon after removal from the flock. Once hand rearing is eliminated and contact is greatly reduced



(except for daily weighing) the chicks gradually decrease interactions with the staff. They are released back into the flock at three months of age and accept the adult birds readily. No apparent imprinting problems have been noticed. Perhaps the biggest benefit to be gained from early weaning is the reduced manpower need to hand rear the young.

### Acknowledgements

*I am extremely grateful to Charles Pickett, Curator of Birds at NZP for his editorial comments.*

### References

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- OGILVIE, M. and OGILVIE, C. 1986. *Flamingos*. Gloucester: Alan Sutton Pub. 121pp

### List of Products Mentioned

Zeigler Flamingo Fancier Diet and Zeigler Flamingo Breeder  
Zeigler Bros., Inc.  
P.O Box 95  
Gardners, Pennsylvania 17324.

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## BREEDING THE FULVOUS-BREASTED WOODPECKER AT BIRDWORLD

By Paul Wexler

We acquired our pair of Fulvous-breasted Woodpeckers *Picoides macei* early in 1994 and at this time the pair were already mature with the female showing a heavily bared brood patch possibly from previous breeding attempts.

The pair were first housed in one of our Lorikeet aviaries, these being fairly indestructible compared with other wooden framed aviaries. A few horizontal perches were placed into the flight, but the birds predominantly used upright logs which were attached to different sides of the aviary.

A straight forward softbill meal was fed to the birds each morning, comprising chopped fruits, soaked Avi plus softbill mix, minced ox heart and a few regular mealworms. All the food was minced and given a light dusting with vitamins.

A single nest box measuring 30cms x 20cms x 20cms and lined with a mix of dry peat and wood shavings was put up on the side of the flight toward the back where it would be slightly sheltered. This box was used mainly for roosting in, though the female spent many hours of the day perching inside with only her head showing at the entrance.

By June 1994, the female still carried the bared brood patch which was cause for a little concern as feathers were not showing any signs of growing back. However on inspecting the nest box two eggs were found so it was deemed that the pair must be quite settled and fit. The eggs having a very thin shell allowed us to see instantly that they had been incubated for some time, but showed no sign of fertility and hence were removed from the box.

No further breeding activity was noticed in 1994 and with the onset of cold weather and the female still only partially feathered, it was deemed prudent to move the birds into one of our Tropical House aviaries to over winter, with every intention of returning them back to an on show flight the following spring.

With a full moult being behind them the pair embarked on a new season very early. Their nesting box which had been moved with them was checked towards the end of February and found to have two fairly well developed eggs inside. Unfortunately it appeared that the chicks had been eaten by the hen nearly as soon as they had hatched.

The nest and indeed aviary, being off show was left as undisturbed as possible, during the subsequent weeks. Feeding and cleaning the only activities that would regularly upset the birds. The nest box was checked once a week so that we could be sure if, and when, the eggs had been

produced and thus gauge an approximate hatch date. Live food was increased in quantity and variety around the time the eggs were due to hatch in an effort to prevent any further infanticide. Despite these efforts a further six clutches of three eggs each were lost. The last having been seen a day before hatching and left for just one more try. When we checked on the hatch day, two had been devoured leaving a single infertile egg. It was at this stage we decided to try hand rearing.

This is a situation that we had tried to avoid, having failed on every attempt at hand rearing Woodpeckers in the past. On the 16th May, seven days after the first egg had been laid, clutch eight was removed from the nest and taken to the Incubation Research Station for artificial incubating.

Of four eggs measured in 1995 the average length was 21.34mm, the width 15.99mm and the weight 2.767 grams. The shell thickness is a mere twelfth of a millimetre. Incubated at a constant 37.5 degree C., the eggs were turned automatically 96 times over each 24 hours, with an additional 5 turns given by hand during the day. Humidity was set at 84 degrees F. (55% relative humidity) until the chicks pipped in to the air space of the egg, when they were moved to a hatcher with maximum humidity and a constant 36.5 degrees C. The whole incubation period was 10 days, culminating in a tiny, blind and bald chick. The first chick hatched on the 19th May and was fed within hours of emergence. Kept in a moist brooder set at 36 degrees C., the chick was fed every hour on mashed, skinless cleaned maggots and mealworms mixed with tiny amounts of vitamins. Begging responses were strong and plenty of food was taken. Feeding stopped at eleven on the first night and resumed at seven the following morning by which time the chick appeared very weak and soon died. The frustrations carried on as the second chick came and went almost as quickly as the first. The third and final chick was treated similarly, but feeds were spread out to every two hours. This was tried because we may have previously been feeding them too much too soon and after all the chick still had residual yolk to absorb. All was well with this method, at least for three days when this chick was also lost. So far the mystery of rearing woodpeckers from the egg remain a problem and will have to wait until next year before it is tried again.

The ninth clutch we decided to try with an idea we had learned from breeding the Yellow-fronted Woodpecker *Melanerpes flavifrons* in 1994 and that was to add a number of rotted logs into the aviary to encourage the pair to produce their own nest chamber. Also as they seemed to be so favourable to the nest box we thought of changing that too. In order to allow the birds to build their own chamber the box was filled tight with a mixture of wetted peat and bark chippings and after watching for a while the male was having great difficulty removing any of the filling. A rethink



led to hollowing a chamber through the peat and chippings to a 10cms diameter and about 23cms deep. This new chamber was then filled tight with dampened wood shavings so the chamber depth could be designed by the pair. Work began almost instantly, with the male pulling out wood shavings from the box entrance till late in the evening. Within a few days the shavings were removed leaving just the soiled chamber walls which dried solid in the subsequent days.

Four eggs were seen on the 12th June and were obviously being sat tight by the female as three could be seen to be fertile and close to hatching. The nest was checked daily whilst the hen remained undisturbed and by the 14th June one chick was seen in the box with mother and appeared to be strong. Only the infertile egg accompanied the chick in the nest, there was no sign of the other chicks, only broken shells.

Again the nest was checked each day to watch the chicks progress and on each inspection it was a pleasure to see the chick become a day older and growing well. Live feeding was kept up and increased daily, mainly with mealworms and cleaned maggots, but occasionally crickets. Little was observed as far as feeding was concerned, both parents were quite nervous about entering the nest if they were being watched. However, toward the latter part of the rearing, perhaps when the chick as becoming more insistent, the parents could be observed from a distance. Still it was difficult to see exactly what was happening, although the chick grew fast and appeared, by early July to be about big enough to fledge, there was no sign of the parents encouraging the youngster out. On the 9th July the chick had indeed fledged and was watched in the afternoon being fed by the male on a wall below the box.

The chick, so far as its plumage indicates, is a young hen differing slightly from her mother by showing a slightly smaller mandible and slightly shorter tail. Within a few days from fledging the new hen flew well with its parents climbing strongly up logs and on the wire. She was not seen to return to the nest box after fledging.

We would be grateful for information on hand rearing Woodpeckers from any birdkeepers who have been successful with this challenge and also if there are available Fulvous-breasted Woodpeckers in the UK for exchanging blood lines.

As described above the Fulvous-breasted Woodpecker *Picoides macei* was bred by Birdworld in 1995, and this is believed to be the first success in this country. Anyone knowing of a previous breeding in Great Britain or Northern Ireland, or of any other reason that would disqualify this claim, is asked to contact the Hon. Secretary.

## THE MEADOW PIPIT

By Rob Taylor

The Meadow Pipit *Anthus pratensis*, at 5¼in (15cm) long, is the smallest of the Pipit family. Unlike the Redstart, featured in my last article, it is an ideal subject for anyone breeding British softbills for the first time. The British Bird Council's Softbill breeding programme takes account of this. When I am approached, as secretary of the programme, by inexperienced breeders asking for help to start with Redstarts, I advise them to gain experience with Meadow Pipits before taking on anything so difficult.

Some fanciers are attracted by birds which are spotted and ticked while other prefer brighter coloured birds, like Yellow Wagtails, Redstarts and Wheatears. The "spotted and ticked" brigade need look no further than the Meadow Pipit. The best description I can imagine is that it is like a miniature Song Thrush. Anyone who likes Song Thrushes will love Meadow Pipits.

The fact that Meadow Pipits are resident softbills means that their requirements - housing and dietary - are easily met. There are no problems of acclimatization or falling in a moult just as the breeding season is about to begin. They can be housed as pairs in outside flights the whole year round and there is no fighting between sexes. They are tough little birds and once the first breeding season is over they go willingly to nest in subsequent years. An added bonus is that they have, on average, three nests of chicks each year. This gives a much greater chance of rearing young than does a single brooding of the Redstart. One Wiltshire member to the BBC has a line-bred family of Meadow Pipits that can be traced back for five generations without the introducing of new blood. This domestication has already brought about a noticeable increase in the size of the individuals being produced.

Compared with some of the more difficult softbills, Meadow Pipit's housing needs are not difficult to cater for a 2.7m x 1.8m flight is quite adequate for a single pair and a larger enclosure could also house a breeding pair of hardbills, such as Siskins, Redpolls or Twites. Breeding success has been achieved in smaller flights and even large cages, though it would take extensive experience on the parts of both the fanciers and the pair of Meadow Pipits concerned before cage breeding is even attempted.

The Meadow Pipit is a moorland bird and so the closer the enclosures resemble a small piece of Exmoor the happier I am. They are planted out with grasses, both moorland and ornamental, heathers and a few small firs. Although they are ground birds they require roosting quarters. I provide these by fitting a slatted shield about 30cm below the flight roof. Into the slots I wedge fir branches, bracken and heather. Some of my pairs have preferred to nest at this height rather than on the ground.

In between the grasses, firs and heathers small patches of bare earth are left, where horse manure and grass cuttings can be placed to attract winged insects. All that remains is to provide flitting posts; rotting tree stumps and old fence posts, and flat stones. These offer vantage points from which flying insects can be taken. No matter what one thinks of barbed-wire, observation shows that most birds seem to enjoy perching on it. In consequence, I have, at times, strung a piece of old barbed-wire across an enclosure. The overall effect of grass clumps, firs, heathers, posts, stones and even wire, is very natural. An uncovered roof is essential to keep the enclosure fresh. A sudden squall of rain brings out many insects which Meadow Pipits take eagerly.

Nests are built from dry grasses, with those of the finest texture being used to form the lining. Animal hair is sometimes used to add a finishing touch. Hidden among the heathers or built into the side of a grass tussock nests are very well camouflaged. Four to six eggs are laid and these have the appearance of miniature Blackbirds' eggs. The incubation period is 13 to 14 days. Meadow Pipits are very good parents and, in my aviaries, invariably rear their own young, unlike my Redstarts which are always hand-reared. It is a lovely sight to see four or five young Meadow Pipits sitting on a post, still being fed by their parents.

Feeding is as undemanding as housing. Any good brand of proprietary insectivorous food can form the basis of the diet. There are several on the market. Into this I mix grated cheese (12mm cube for each pair) and a similar amount of crumbled sponge cake. These additions, as well as adding variety, make the proprietary mixture go further and help to keep down the feeding costs. Twice a week a separate dish containing sweet biscuit (I use rich tea) reduced to crumbs with the back of a fork, is offered and this is taken with great enthusiasm. A pinch of small mealworms completes the out-of-breeding season diet. Being residents, Meadow Pipits nest early and so buffalo worms are offered from March onwards. The amount of small mealworms is increased at the same time. If the enclosure is arranged as described, the occupants will spend a lot of time on the ground, where they will find plenty of live food.

The major problem to be faced with Meadow Pipits is a small one: discovering which are cocks and which are hens - sexing. In appearance the sexes are identical and so it is their songs that must be used for identification. Once full breeding condition has been reached, the cocks cannot help but sing, but in the lead up - which is the time that the identification needs to be made - they can be shy; stopping singing as soon as you approach their enclosure. I am fortunate that the lounge of my house looks out onto the flights and so I can sit, unobserved, and watch my Meadow Pipits behaviour through binoculars. That small difficulty apart, the beautiful Meadow Pipit is an ideal subject for anyone considering taking up breeding British softbills for the first time.



## BREEDING THE RED-FACED LIOCICHLA AT THE TROPICAL BIRD GARDENS, RODE

by Mike Curzon and John Meeke

The Red-faced Liocichla *Liocichla phoenicea* has four races that come from the Eastern Himalayas, Assam, North-west Thailand, S.W. China and Northern Indochina. No colour plate has appeared in the Avicultural Magazine, but the bird is illustrated on plate 23 of the Birds of China by R. Mayer de Schauensee. It is approximately 23 cms. It is the only babbler with sides of head and neck crimson, upperparts olive brown with centre of belly olive. The tail is dusky olive, barred black at bottom. The colouring when in breeding condition is wonderful to observe, but when not breeding the birds can become drab in appearance.

It was early in 1987 that this bird appeared in any numbers on dealers lists quite often with the Red-winged Laughing Thrush and the Red-tailed Laughing Thrush. Our pair were exchanged for a pair of Rode bred Spreo Starlings in late spring 1990. They couldn't be visually sexed and still cannot except that we know which is the hen as the cock is slightly larger in our pair.

They were housed in what is termed the bottom Peacock aviary being approx. 6.25m x 6.25m x 2.5m high with a shelter at the back. The aviary contained Elms and Berberis bushes and their fellow inmates were a pair of Splendid Starlings, Schalow's Touracos and Grey Peacock Pheasants. Their food consisted of mixed fruit, minced beef, spiked apple, Orlux insectivorous mixture and the odd mealworm, plus any live food that they caught in the enclosure.

The birds spent the winter of 1990/91 in this flight and nothing appeared to be happening when on August 15th a single fledged chick was seen sat on a front perch with its parents. By 1st September it was independent. The aviary was searched to see where the nest had been. As the parents had a habit of sitting in the bushes nothing was suspected. The nest was in a clipped elm 1.2m above the ground, built on the outside twigs. It was U-shaped mainly built with grass lined with fine grass and moss.

Early in November it was surgically sexed by Andrew Greenwood and was found to be a hen. It was kept inside during the winter and is now at Paignton Zoo with one of their cock birds.

Once again during the winter of 1991/92 the parents were wintered outside but they had access to their shelter. On 12th May the birds were observed building a nest with grasses etc. We do not interfere with the birds when the nest is difficult to observe, but on Friday 5th June three eggs were seen. Five days later on 10th June 2 chicks were seen in the

nest. This nest again being in the middle of the aviary towards the back. A single chick fledged on 3rd July and on 10th July it was taken inside where it somehow managed to cut its foot and it had to be treated.

Another single egg was seen on 16th July with a chick being seen on 31st July when it was seen perching with its parents either side making a tremendous amount of noise. This year when they had young we threw mealworms, some crushed crickets and wax moth larva onto a patch of grass where they had to be quick to beat the other inmates which in 1993 were a pair of Greater Hill Mynahs, Pink-crested Touracos and Grey peacock Pheasants. The Pheasants were removed and a single chick was reared. So 1991 produced a single bird reared with 1992, producing two. This is a first breeding here at Rode and maybe we thought it was a UK first breeding until, we read of the account in *Foreign Birds* by G. Massey Vol 58 no3. page 77.

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### **Register of Birds Bred in the UK Under Controlled Conditions for the Years 1991 - 1994.**

This annual register for 1994 published by the Foreign Bird Federation is the tenth. Each year the numbers increase but still a lot of breeders both public and private will not send in their returns. Once again Barry Hammond of the Mealworm Company is the sponsor.

There are numerous UK first breedings including Yellow-faced Mynah, Black-backed Fruit Dove, Red-Tailed Amazon and Roadrunner.

Birds of Prey are poorly represented considering the numbers offered for sale in Cage and Aviary Birds. Cranes are better represented but there must be a lot more Doves being bred than are recorded. Parrots make good reading and for this the Parrot Society must be thanked for allowing their members breeding records to be included.

Touracos in 1994 provided seven different species but in small numbers despite the efforts of the International Touraco Society to stimulate interest. Five species of Hornbills was the best so far for this family. Laughing Thrushes are proving to be ready nesters and it is encouraging to see the Yellow-throated being bred.

Seedeaters are proving popular and not only the Australian where over 2000 Gouldian Finches are recorded. The Blue Waxbill group of breeders must be pleased with their efforts especially getting 26 Violet-eared Waxbills and 49 Purple Grenadier Waxbills to independence. A final mention of 25 Rothschild's Mynahs (the bird depicted on the front cover) of the *Avicultural Magazine* is noteworthy.

Copies of the Register are available, price £2 from R.E. Oxley, 126 Grosvenor Drive, Hornchurch, Essex RM11 1PG.

## PINK SPOTTED FRUIT DOVES

By J. Vella

In October 1992 my husband and I went to the East of England show at Braintree, Essex. It was the first show we had attended and we were not looking for anything in particular. However, we were drawn towards one stand, which was displaying several pairs of Doves and Pigeons.

Our aviaries consist mainly of ground dwelling Quail, Partridge and Pheasants, and we were fascinated by a pair of Pink Spotted Fruit Doves *Ptilinopus perlatus*. Thinking they would make a colourful addition to the upper area, we brought them.

Once home we fed them on chopped fresh fruit and Universal food. Apple, banana and grapes formed the basis of their meal each day, with other fruits of the season. We do not give them sharp citrus fruits - such as orange or pineapple and they themselves have decided they are not keen on blackberries. Their favourite fruits, by far, are bananas and cherries.

In winter when fruit is scarce, and expensive, their diet is supplemented with dried mixed fruits which have been soaked overnight. They have a preference for plain fruit, so we no longer add Universal, and something they really enjoy - as a treat - are glacé cherries.

The next year 1993 we didn't expect them to breed, as the cock bird was rather immature. So in early spring we introduced them to their new quarters a 1.8m x 1.8m x 1.8m outdoor flight where they lived happily together all summer. In late October they were moved back into the covered aviary, still a 1.8m x 1.8m flight, to protect them from the frosts.

As this flight is a little more secluded it was decided to leave them there for the summer of 1994, in the hope that they might breed. They were provided with several flat baskets, so that the hen could make her own choice, and she soon laid her first egg.

We had been advised that fruit doves only lay one egg and that both birds take equal turns to incubate it. The next morning the hen was sitting, and she continued to sit for most of the time only leaving the nest to relentlessly chase her mate. She chased him to such an extent that at one stage we really thought she would kill him. He would not take his turn to sit, and after a week, she left the nest completely. We candled the egg and found it to be infertile. This behaviour continued all summer, but with both birds now taking turns sitting. Unfortunately not one egg was fertile.

That winter, although still in the same aviary, they were moved to a small 1.8m x 0.9m unit nearer the heat source, as the frosts were severe.

Despite their confined space the hen began laying again in February of this year (1995). As this time she made no attempts to sit we removed the



egg, only to have her lay another a few days later. Then, one day, there were two eggs. The problem solved, we had two hens.

We were fortunate enough to obtain a surgically sexed cock bird and, in March, we introduced him to the hens in the hope that they might form a breeding trio. However, the cock paired with the older hen and they objected to the presence of the younger bird. She was removed to the flight next door. Unfortunately, as yet, we have been unable to obtain a mate for her.

Our pair soon chose a nest basket and laid the first egg. They took turns at incubating it but, unfortunately, with only hours to hatching they left the nest. Although the egg was cold we placed it in our incubator and, against all odds, the next morning it had hatched.

Now we had a problem of how and what to feed it. Never having kept Doves before we made many telephone calls for advice, but no one could help. We therefore tried to crop feed the chick with pulped fruit, but sadly after 4 days it died.

Soon our hen laid again. By the seventeenth day we were both nervously checking every few hours, making sure the nest was still attended. On the morning of the eighteenth day an empty shell lay on the floor. Hopefully she was now sitting on a healthy chick.

Every day we expected to find a chick on the floor, dead, but our fears were unfounded and the doves proved to be excellent parents.

It was twelve days later that the youngster emerged from the safety of the nest. It was a perfect miniature of the parents, minus the pink spots. This came as a surprise to us as we had been expecting the fledgling to be almost fully grown like a Racing Pigeon.

Both parent birds fed the chick and it grew very quickly. Their fruit was now being diced finely in preparation for the chick to feed itself. It is now thirteen weeks old, and almost as big as its parents.

We are hoping that the chick is a cock bird so that we can pair it with our single hen next season.

Although the weather has now turned cooler, and the days are shorter, our pair have mated again, and they have been incubating for four days. With luck we may have another Pink Spotted Fruit Dove chick this season.

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## OBSERVATIONS ON THE VICTORIA CROWNED PIGEON

By Rosemary Wiseman

The Victoria Crowned Pigeon *Goura victoria* is one of three species which comprise the genus *Goura*. The other two species are the Blue-crowned Pigeon *Goura cristata* and the Maroon-breasted Pigeon *Goura scheepmakeri*. Briefly, the differences in coloration can be summarised as follows: the Blue-crowned Pigeon is completely blue with maroon bars on the wings and a frothy blue crest, Scheepmaker's Crowned Pigeon has a maroon breast and white crest which looks like spun nylon fibres, while the Victoria-crowned Pigeon has a maroon breast and a crest like a blue doily with semi-circular fronds tipped with white. The Crowned Pigeons come from the islands of New Guinea.

A single bird (DNA sexed as female) was obtained from Rex Merritt (an English importer) in October 1994. This bird was part of a consignment which had come from the Wildlife Breeding Centre on the Philippines. Viewing the group, the majority of the pigeons rushed away from visitors to the far side of the holding area, this particular female however not only strode purposefully towards them but directed an enthusiastic welcome apparently towards the visiting shoes. In this procedure, which must form part of the courtship ritual, the bird bows its head touching its forehead on the ground and utters a hollow booming sound, while fanning its tail.

Beeton's Book of Poultry and Domestic Animals (cheap edition), published at an unspecified date in the nineteenth century has some interesting comments on the Crowned Pigeon. "They are easily tamed, and in the East Indies are frequently kept in a farmyard, among the ducks and geese. They have all the habits of the common little pigeon, and bill and coo like the most ordinary 'runt'. The cooing, however, is a trifle more violent than that of the English species. Indeed., M. Bourgainville relates that his sailors were greatly alarmed on hearing it, for the first time, in the wild and unfrequented spots of some of the islands visited by him, apprehending that the mysterious sounds proceed from tribes of lurking savages lying in ambush, presently to fall on them and devour them."

While Derek Goodwin in *Pigeons and Doves of the World* believed that only the male engages in this booming behaviour, and Brian Coates in the *Birds of Papua New Guinea* is unsure whether it is a determinant of sex, successful breeders confirm that both sexes bow to each other, although the males may be a little more vocal about it than the females. In the case of this particular female who is extremely tame and was obviously hand-reared the bowing is stimulated by shoes the heavier and more masculine in style

the better. Probably there is some kind of association between shoes and the handrearer.

Although doves and pigeons are generally regarded by aviculturists as amongst the least intelligent species, observations of this particular bird does not support this. At the time of purchase, it was too cold for the pigeon to go directly outside, and so it was simply released into the house where it had to confront three dogs, various people and other birds.

Initially it was much alarmed, took off, flew round the living room and landed on the top of the bookshelf three metres up the wall. However, in a remarkably short time - within a week - it had adjusted to the dogs (who ignored it) and while not initially seeking their company (as it later did) it would walk past them raising its wings in a defensive gesture common to all pigeons.

During those first few weeks although the bird ate well and appeared lively it did suffer from enteritis, with droppings which were runny and green. Although a specimen sent for analysis tested sensitive to a number of antibiotics, there was not actually much response to any of them. Eventually the condition seemed to clear up without any medication apart from the addition of a probiotic to the food. Although some kind of bacterial infection was present, the symptoms seem to have been a response to the stresses of a new situation. This assumption is supported by the fact that when the pigeon was eventually moved to an outside aviary, precisely the same thing happened.

The Victoria Crowned Pigeon proved to be very sensitive to change generally. Since it was too big to confine to a cage, it was during its life indoors, free to wander through the sitting rooms, hall and kitchen. Once familiarised with the routine it sought company, preferably human, but dog if no human alternative was available. This meant that mornings were generally spent in the kitchen where the bird food was being prepared. The Pigeon would peck happily around on the floor picking up random bits of seed and fruit, disregarding its own dish until after everything else had gone. Once activity in the kitchen ceased, it spent most of the rest of the day in the sitting room with the dogs, wandering around, or perching on the back of chairs. At night it roosted always in the same place on the back of the sofa ignoring the television. This routine was followed everyday, however a large piece of plasterboard which was left in the hall against the banisters was sufficiently strange to make the bird remain in the sitting room without attempting to cross the hall to the kitchen. It ate and drank nothing since the food and water dishes were in the kitchen and only when the plasterboard was removed after a couple of days could it be persuaded to venture out again.



As the months of winter passed, the Pigeon became increasingly territorial and aggressive. While it appeared tolerant of, even responsive to, the dogs and was never seen to attack them, it had no hesitation in pecking repeatedly the legs and feet of less favoured household inhabitants. It is difficult to know what aroused this aggression as it seemed fairly inconsistent. Certainly bare feet and sandals provoked it, and it did not seem to matter whose they were. It would seem that these birds are stimulated by immediate visual impressions and are unable, as a parrot would be, to recognise individuals as entities apart from their clothing. Any attempts to push it away or shut it out of the room was met on these occasions with raised wings and pecks on the hand.

The bird seemed to identify with the dogs more fully as time went on. It followed them around, roosted nearby where they slept in the day and even "played" with the puppy. These games involved picking up and shaking the end of the dog's lead while the puppy tugged at the other end, and running after and carrying away a little ball when it was thrown.

It was difficult to assess how much of this was intelligent behaviour. The large red eyes of these birds are constantly watchful, but how much of the interaction with the rest of the household is consistent with actual awareness is difficult to say. Certainly the Pigeon, like all animals responded to routine and appeared to resent alterations to it. When, for instance, it was shut out of the living room during a tea party, it paced about outside the door for over an hour. There is no doubt that it sought and enjoyed company and when left alone would patrol up and down as stressed animals do booming repeatedly and disconsolately.

Although the diet of these pigeons is basically one of seeds, (corn, small seeds, sunflower, hulled peanuts and safflower), they also enjoy fruit - particularly diced apple - and some egg food. Vegetables, cooked or raw and grated are thrown around but rarely seem to be eaten. Livefood also is largely ignored. As is the habit of pigeons, the seed is flicked from side to side as the birds hunts through it for some favoured morsel. This pigeon drinks very deeply, and rather than simply taking drops it is possible to see the level in the water bowl reduce as the bird takes in the liquid.

When finally transferred to an outside flight prior to pairing (two birds of this size indoors was one too many) it spent much more time on perches than on the floor of the flight. Like many floor walkers these birds have delicate feet and are susceptible to frost bite. It was not until a mate was obtained for it that it actually spent any time on the floor, roosting at night on a perch.

These large pigeons appear to have soft fringed feathers on the chest and neck, but all parts of the plumage, both back and front, are very resistant to water, even heavy rain just rolls off them as if they were waterproofed

and neither the crest nor the body feathers show signs of saturation although they may feel damp. Having said this, the birds are moved inside during wet and cold nights. This involves placing an arm against their legs at the back so they step on it and can be thus transported from their regular outside perch into a house. They have never roosted inside by themselves.

J.G. Wood quoted in Beeton's Book of Poultry describes a bird from the Zoological Gardens sunning itself. "They have a quaint habit of sunning themselves upon the hot pavement of their prison, by lying on one side, laying the head flat on the ground, tucking the lower wing over them, and spreading the other over their bodies, so as to form a very shallow tent, each quill feather being separated from its neighbour and radiating round the body. Sometimes the bird varies this attitude, by stretching the other wing to its full extent, and holding it from the ground at any angle of 20 degrees or so, as if to take advantage of every sunbeam and every waft of air. While lying in this unique attitude, it might easily pass at a little distance, for a moss covered stone, a heap of weathered leaves or a ragged tree stump, with one broken branch projecting to the side". I have never witnessed this behaviour, although sun bathing is common in ground pigeons like the Bleeding-hearts and Golden-hearts.

These birds although very large and somewhat clumsy have never shown any aggression to the other birds which share their aviary. However this does not necessarily mean that they do not possess a forceful and at times dominating personality.

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## BREEDING THE SPLENDID STARLING

By Stewart Pyper

The Splendid Starling *Lamprotornis splendidus* is the largest and the most beautiful of the short tailed Glossy Starlings. It extends in range from Nigeria across Kenya, Ethiopia, Uganda, Tanzania, Congo, Angola and into Northern Zimbabwe. It is said not to be a common bird, but it is very vocal, appearing to be able to mimic certain noises. It is a very large Starling approx. 30cms in length.

The bird is difficult to depict in a colour illustration. The colour plate in Vol 88 No. 4 (1982 - Softbill issue) although depicting the general shape of the bird with its very distinctive white eye ring does not show the correct coloration. The male's plumage is almost all metallic so when the bird is caught in the sun its chest and throat can be seen to be purple, becoming bluer as you move down to the belly. The females are generally smaller with the purple being blue. The birds greatly enjoy calling. The cock puffs up his throat feathers and at times his call seems almost alike a human voice.

The Splendid Starling was first bred in the country by Raymond Sawyer at Cobham in 1976. The Tropical Bird Gardens, Rode bred them in 1987 and Leeds Castle are also said to have been successful. It is believed that our late President, Jean Delacour, had the first world breeding in 1974. The bird has never been common in captivity. It is mentioned in the *Avicultural Magazine* in 1925 and not again until 1975. The first time that most members will have seen the species is at Cobham in the collection kept by Ruth Ezra and Raymond Sawyer.

I was very interested in this Starling and hoped that one day the opportunity to own and breed them would occur. In 1985 Rex Merritt, a member of the Society, imported approx. 14 birds. Mike Curzon, a director at the Tropical Bird Gardens, Rode told me of them and I asked for two pairs if possible as he was having the same number. On 3rd December they were collected and put into an indoor flight 1.6m x 1.2m x 1.8m where they spent the winter. The food at the importer had been mainly pellets and crumbs. I offered Orlux softbill food plus some Claus, fruit in season and some mealworms. This they readily took to. There was a dish for bathing and this was extensively used for the first few days.

Around Christmas I had time to study the birds and came to the conclusion that all were hens. They all looked very similar. There was no sign of purple on the throat or breast but all would enjoy calling. Rode had the bad luck to loose a cock from their two pairs so we had a single cock and six hens between us. In 1986 a few more Splendid Starlings were



imported but mostly in pairs. I know of a single male being obtained by a sharp eyed exhibitor who spotted it amongst a group of Purple Glossy Starlings at a dealer's premises.

In April 1986 the four Splendid Starlings were put into an aviary 3.7m x 3.7m 1.8m high with an open fronted shelter at the rear. The aviary had been rebuilt in the early Spring. Over the years this is what has happened to the birds:-

A - still with me

B - exchanged with Andy Perkins for a cock on 3rd September 1989. Andy subsequently lost the hen and his cock died on 23rd December 1991 very suddenly.

C - exchanged with Raymond Sawyer for a proven cock on 12th August 1990.

D - loaned hen to Andy Perkins on 29th March 1992 but it died in 1994.

The cock has only got its right eye. Whilst with Raymond Sawyer it had young but the chick and its mother were killed with the male losing its left eye. What did this is not known, but I knew it was a fertile cock. These birds do appear to be long lived as my original hen had been with me for over eight years when she reproduced. Raymond Sawyer's first breeding pair had been with him for over 12 years before they bred.

Over the years the birds have generally had the same flight especially the original hen. Some time has been spent inside in the Winter but with the generally milder winters in recent years the birds have spent most of their time outside. Christmas 1993 brought bad weather and the birds were brought indoors where they spent over three months until put out at Easter 1994. I believe that if there are prolonged cold spells their feet could be affected.

Nesting had taken place in 1992 and in 1993 eggs were produced. 1994 saw the birds choose an alternative box. The birds in the aviary in 1994 were an old pair of Mountain Witch Doves, three Chestnut-tailed Sivas and a single Meve's Starling. Food was still generally the same except that Claus was only used infrequently, and nowadays not at all. It became expensive and difficult to obtain. Sometimes Bogena and Haith's insectivorous foods are offered as well. Waxmoths are given at times. A home made nectar is available and is now taken every day.

The aviary has a Yew bush which is cut back each year. There are 2 nest boxes, the one chosen being at an angle of 60 degrees from the vertical 40cms x 20cms x 20cms with a 5cm hole. A short perch is fitted near the rear entrance hole to help entering. Coconut fibre, grass (both fine and coarse) plus some feathers were carried into the box by both birds and a dish shaped nest was made. They enjoy, as do a lot of the Glossy Starlings,

pulling small green leafs from any plant in their aviary. Sometimes a few branches are put in during the early summer so that they can continue with this habit, and some of the leaves or shoots are taken into the nest box. It served its purpose because two eggs were laid by 6th June. My father established this by feeling them. Incubation is believed to be 17 to 19 days. These two eggs were not removed for observation but the eggs from 1993 were looked at and found to be typical Starling i.e. blue with brown markings. They were not measured. On Wednesday 20th June when the birds were being fed in the morning the cock was seen to take mealworms to the nest box. Suspecting that young had hatched my father supplied more during the day. A supply of mini mealworms had been brought in anticipation of an attempted breeding.

Over the next few days mealworms were taken to the nestbox. By careful listening it was thought to be two chicks. A torch was used to look into the box via the entrance hole and a single chick could be seen although it sounded like there were still two in the nestbox.

On Sunday 10th July the first youngster left the nest, with its mate the next day, which points to the eggs being laid on successive days. Waxmoth larvae were also being given before they had left the nest. Their proud parents looked after them. They could fly very well and thankfully we had no cloud bursts to cause problems. Their water dish had been an upturned plastic dustbin lid which had fresh water every other day. When the chicks left the nest the water was reduced in case this caused any problems. How often do we hear that water causes the death of newly fledged birds?

I was interested to observe what the youngsters would be. One was quite a bit larger than the other like its parents. Cocks are generally thought to be the larger and very soon the purple feathers of the cock's front could be clearly seen. This was seen within a month. The other was a hen.

The parents and their young lived together with no further attempts at breeding. The young cock went to the Tropical Bird Gardens, Rode on Saturday 11th March 1995. The young hen was put in an aviary with other birds but could be seen and heard by her parents when calling. A cock is required for her. In 1995 nest building was minimal and breeding did not take place. The young cock at Rode mated with their breeding hen but no young were hatched. My pair were brought in at Christmas and have spent the winter indoors being put out on Sunday 14th April. Their breeding nest box has been replaced with a similar sized box and hopefully they will reproduce later this summer.

## Reference

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Vol 88 No. 4 :189

## BREEDING THE RED-BILLED BLUE MAGPIE AT THE TROPICAL BIRD GARDENS, RODE

By Mike Curzon

The Red-billed Blue Magpie *Urocissa erythrorhyncha* is a well known bird in aviculture. It was first bred in 1914 at Lilford Park (A.M. 1916:70), and it has been bred numerous times since. There has been no colour plate in the Avicultural Magazine. The bird is about 66cm overall in length of which about 46cm is accounted for by the tail. The basic colourings are black, blue and white against the red of the bill, legs and feet making a conspicuous contrast. Sexes are similar but size can vary in some pairs. The birds come from the Himalayas, Assam, Burma, North Vietnam and China: there are 5 races. Jean Delacour told me that he saw them in and around Peking when he was in China between the world wars.

In recent times Boehm bred them in 1960 at Trenton, New Jersey USA. Charles Everitt (A.M. 1960:226) describes this breeding of the Occipital Blue Pies presumably referring to the Himalayan race. 5 were reared and Everitt asked if this had been recorded before. Also Everitt was attacked by the cock which scared his forehead.

The Red-billed Blue Magpie has in the past been kept at liberty in some of the larger collections. Although we have successfully kept several species of Macaws at liberty I have deep reservations about trying this out with a Magpie. It would probably stray and be killed by being shot. The problem of people misusing their guns will continue to be with us all. There is a note in the Avicultural Magazine (1970:38) from one of Donald Risdon's oldest friends, Ken Norris, on his escaped Red-billed Blue Magpie. The bird (his cock) escaped in June and was recaptured in mid November. Ken had not seen the bird during that time, but it had moulted and was perfect. He had obviously "lived off the land", and enjoyed himself.

The Red-billed Blue Magpie has always been a popular bird with our visitors here at the Tropical Bird Gardens, Rode, as it moves around its aviary. It has been bred on numerous occasions over the last thirty years being easy to feed and hardy. They must be kept on their own or with birds that can defend themselves. If other occupants were to nest the Magpie might be tempted to eat the eggs or the young.

The reason for this article is about a very prolific pair, the young of which have been exchanged or sold to various collections over the last four years. Red-billed Blue Magpies are well known birds in avicultural collections both private and public. They are hardy, long lived and stand a good chance of reproduction. They do best in large flights. For the keeper of a small collection who had a collection of small birds I wouldn't suggest



putting these birds in an adjoining aviary as they would be frightened.

The subjects of this article have a large flight being 23 metres long and 10 metres deep and averaging 5 metres high. They share it with a pair of English bred Secretary Birds. The Magpies are able to be seen in all their splendour as they glide along from end to end. There is a shelter at one end approx. 3.5. metres off the ground, where they could go if they wished. It was thought that they might make their nest there; but no, they decided to build it at the opposite end approx. 4 metres above the ground. It is a typical Magpie nest looking unsafe, but doing its job.

Generally four or five eggs are laid on alternative days. Incubation is done by both with the hen doing the greater percentage of this. It is about 12 days. This does vary a day either side but regular inspections are not welcomed by the parents. The young have in addition to their parents normal food, hard boiled egg (mashed) and day old chicks. Just before they can fly at 3 weeks, they are taken away. By this I mean the eldest, so if there are five young, there can be an eight day difference. All birds are then finished off hand reared, but this is relatively easy as they readily accept food and grow well. They are not small birds at this stage of development and you could feed them with almost anything. We use minced beef with pheasant starter crumbs, Orlux insectivorous mixture and hard boiled eggs. This is rolled into little balls and eagerly consumed. Approx. feeding times are 7.00am, 8.00am, 11.00am, 1.00pm, 3.30pm, 5.00pm and 9 - 9.30pm.

The young are a dull version of their parents without the long tail. Already this year there is a single independent youngster and at the time of writing (Monday 19th June 1995) they are down on eggs again. From 1992 until the present 32 have been reared. The birds are surgically sexed in the autumn by Andrew Greenwood. The largest nest has been five and of this the most of one sex has been four. Over the years cocks and hens have balanced out.

The reason for hand rearing has been the presence in the aviary of the Secretary Birds. In 1992 the first youngster left the nest, flew down and was pounced on and killed. The other four were then removed and this is the reason for removing them when the eldest chick is about 21 days.

The young when reared are kept in an open top brooder with some heat being provided at times. e.g. if early in the year before the weather becomes warm and/or hot. It was hoped to establish a second pair in a smaller flight with one of our cocks and a hen from Paulton Park, but the hen died earlier this year for no apparent reason. A replacement is being obtained this autumn.

## BREEDING THE YELLOW-FRONTED TINKERBIRD

by M & N. Curzon

The Yellow-fronted Tinkerbird *Pogoniulus chrysoconus* is a small African Barbet with a general distribution from Senegal to North-western Ethiopia, Uganda and Zaire. There has been no colour plate in the *Avicultural Magazine*. Its size is approximately 11cms. A brief description is a yellow forecrown, a lemon yellow rump with a yellowish edge to some feathers including a buffish yellow belly. There are also white, black and buff colours all combining to make a rather starker coloured bird in comparison to some of its more gaudy relatives. The male's bill in our pair is thicker and the yellow on the bird is more intense than the female when in breeding conditions. When they are out of breeding conditions they are alike.

There appears to be no previous references to the Yellow-fronted Tinkerbird in the *Avicultural Magazine*. Its close relative, the Red-fronted Tinkerbird is mentioned when it was imported in 1930 and in the wild in 1958. It was in the late 1980's that a small number of Tinkerbirds were imported but no breeding reports have been published.

Our birds were purchased from a dealer in the Spring of 1993. Their accommodation consists of an inside flight 1.8m wide x 3.6m long x 1.8m high at the front increasing to 2.25m at the back. There is a sloping roof. It is block built onto an old brick wall and half the front is glass. The roof of the inside is corrugated perspex. In winter the temperature is maintained at between 50° to 55°F. On occasions in winter there is a supplementary light from 6am to 8pm on a time switch. The birds have fought but now with more cover this no longer occurs. The cock was taken away in order to reduce his condition. On to the back brick wall is a double breeder and he was put in this for some time. This cage acts as a release cage for new birds.

Some of the plants inside include *Plumbago auriciata* (Cape Leadwort) a good climber which goes all the way to the roof via a log and cuts off about a third of the flight: *Datura* (Angels Trumpet) and *Cassia corymbosa*.

Other occupants at the time of nesting were pairs of Rodensingus, Lavender Finch, Fernando-Po Mannikin, Black-naped Fruit Pigeon, Cape Dove, 4 Red-headed Tits, a hen Roulroul Partridge and a single Chestnut-flanked Zoestrop. The Roulroul always roosts next to the night light and therefore gets some extra warmth as this is on all the time.

The birds also have access to a large landscaped flight, the dimensions are 3.6m x 3.6m x 2.25m high, which has been well planted with many different shrubs, grasses and ferns. This gives the birds a more interesting

environment, which in turn we hope will encourage breeding. There are also many a large logs (potential nest sites), and a small shallow pond which is situated on the top of a walled raised border, planted with dwarf shrubs and ground cover plants.

Some of the plants used are:-

*Lonicera nitida* "Baggesens Gold" - a good shrub for nest cover.

*Viburnum davidii* - a small evergreen shrub which copes with light shade.

*Photinia x Fraseri* "Red Robin" - large laurel like shrubs, the new growth is red.

*Chosiya ternata* "Mexican Orange Blossom"- medium sized with fragrant white flowers

*Matteuccia struthioptiris* "Ostrich Feather Fern" - has beautiful feathery fronds (leaves).

The foods available were grapes and soaked sultanas (cut very small), apples, bananas, Orlux insectivorous mixture and mealworms. Obviously in the summer other livefood would enter the aviary, especially earwigs. This summer was very hot and we were plagued by wasps which in fact eat the mealworms at times.

The previous year (1994) the Tinkerbirds had played at nesting, spending a great deal of time burrowing into a lime log. This lime log is quite soft being 60cms x .25cms diameter. It is 23cms from the roof to the top of the log. Halfway along the underside is the entrance to the nest. This hole had been dug in 1994. Other suspended logs were burrowed but only for about 5cms. Could they have been searching for grubs or perhaps practising ?

We are certain that there was a failed attempt early in the summer of 1995, when both birds went missing for some time. During July another attempt was underway. They were the dominant birds in the flight when seen. There were extra mini mealworms given and on Sunday 6th August there were 3 Tinkerbirds in the inside flight. The young bird was a paler version of its parents especially its yellow colouration. Since the bird fledged the Red-headed Tits now are the "top dogs" and incidentally each morning these Tits drink from the nectar dish.

We will not be splitting the log to examine the nest. The log was roughly positioned north to south. You are able to put your finger in the hole for about 2.5cm before it turns right. It was not easy to find a suitable lime log. There is a bigger log in the outside flight. After 6 weeks the youngster was removed into a small 1.2m x 61cm x 1.8m high flight inside where it lives with a pair of Grey-checked Parrotbills which have been brought inside from their flight for the winter. Incidentally the young bird is a cock. The Parrotbills built a nest in a *Buxus sempervirens* "Common box" 30 cms from



the ground. It was washed out in a rare summer thunderstorm for 1995.

A few further points are that we never saw the birds mating and have never seen an egg. They dislike rain as they go inside but will stay outside in drizzle. An adjoining aviary had a pair of Blue-crowned Hanging Parrots that reared a single youngster and a hen Yellow-winged Sugarbird.

Early this year (1996) another youngster fledged. The parents used the same log as in 1995.

January 8th - only one bird could be seen

January 17th - neither bird was seen

January 21st - tails bent

January 26th - noise in the log

February 16th - both birds were out and there was still a noise in the log

February 28th - young bird flying about in the flight

The young birds are being sent to London Zoo. If any member knows of other Yellow-fronted Tinkerbirds please could they contact us here at Rode.

As described above the Yellow-fronted Tinkerbird *Pogoniulus chrysoconus* was bred by M & N. Curzon in 1995 and this is believed to be the first success in this country. Anyone knowing of a previous breeding in Great Britain or Northern Ireland, or of any other reason that would disqualify this claim, is asked to contact the Hon.Secretary.

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## FIRST BREEDINGS

On page 189 of Volume 100 no. 4 the breeding of the Black-backed Fruit Dove, *Ptilinopus cinctus* was reported as being bred at London Zoo.

On page 49 of Volume 101 no. 2 the breeding of the Red-tailed Amazon *Amazona brasiliensis* was reported as being bred at The Tropical Bird Gardens, Rode, Somerset.

On page 73 of Volume 101 no. 2 the breeding of the Mountain Peacock Pheasant *Polyplectron inopinatum* was reported as being bred at Birdworld, Nr. Farnham, Surrey.

It is believed that these are the first breedings in this country. Anyone knowing of a previous breeding in Great Britain or Northern Ireland, or of any other reason that would disqualify this claim, is asked to contact the Hon. Secretary.

## THE SOCIETY'S VISIT TO HALLOW

by Stewart Pyper

On Sunday 3rd September members accepted the kind invitation of Ken & Mona Dolton to visit their beautiful home at Hallow, Nr. Worcester. This was the society's third visit - the previous years being 1986 and 1991. Despite the long hot dry summer the lawns had a touch of green about them as it has rained on the Thursday evening. There were a few drops of rain in the morning but we had a lovely warm afternoon.

Before describing the birds a few notes must be penned reference the rest of the collection. There are approx. 200 tortoises of various forms from the small to the large giant tortoises. It is believed to be the most comprehensive in the country, perhaps even in Europe. They have access to heated indoor shelters. The heat comes from lamps which helps to maintain the temperature in inclement weather. They have a varied diet and several have successfully reproduced. Ken was able to point out that if certain vitamins are not available or are consumed in too great a quantity, it affects the shell. There are various mammals including Morai and Wallabies. Recently Ken has added a new large paddock. The gardens are always a joy and there are various greenhouses, one of which is devoted to ferns. Of historical interest to members there is a *Pamianthe* handed from Major Pam to Alfred Ezra OBE, to Raymond Sawyer to Ken Dolton. Four members to whom the Society owe a great deal.

It is Parrots that Ken is best known for. Altogether there are 121 aviaries all having various types of shelters. Amongst the birds noticed were Hyacinth, Scarlet, Military and Buffon's Macaws, various Cockatoos, including a magnificent pair of Leadbeaters. There were Australian and Amboina Kings, Lesser Vasa Parrots, Blue-throated and Queen of Bavaria Conures, plus a varied selection of Australian Parakeets. Lorries were well represented including Duyvenbode's, Stellas, and Blue Streaked. Many species had bred and some pairs still had young with them. Having a large number of flights, Ken is able to keep a selection of singletons in case of emergency. It is always a pleasure to see Thick-billed Parrots for which Ken was awarded the Society's Medal in 1969 for the first breeding in Great Britain. Numerous Amazons were seen including Yellow-naped, Green-cheeked and Double Yellow-headed.

There is a large selection of waterfowl including all seven species of Swans. There were also Crowned and Demoiselle Cranes. As always time was short to do the collection full justice. Out thanks to Ken and Mona for allowing us into their beautiful home and gardens.

## **REPORT OF COUNCIL MEETING HELD AT HALLOW ON SUNDAY 3RD SEPTEMBER 1995**

### **Present:**

Prof. J.R. Hodges (Chairman), Miss R. Ezra (President), K.W. Dolton (Vice-President), R.C.J. Sawyer (Vice-President), G.R. Greed (Hon. Secretary/Treasurer), J. Blossom, M. Curzon, M. Ellis, N. Hewston, K.J. Lawrence, S. Pyper, J. Trollope, R. Wilkinson.

The Chairman Prof. J.R. Hodges resigned after approximately 15 years. K.J. Lawrence was elected Chairman for 1996.

The Editor F. Woolham resigned. A new Editor was not appointed.

G.R. Greed in his report anticipated a deficit for 1995 due to a fall in membership and cost of colour plates in the Avicultural Magazine. Donald Risdon, a former Vice President and long standing member, had given the Society a bequest. It was agreed that each year an award be made for the most interesting article published in the Avicultural Magazine. Members to forward their views for the Council to decide. A painting by Malcolm Ellis to be the first award.

## **REPORT OF COUNCIL MEETING HELD AT COBHAM ON SUNDAY 24TH MARCH 1996**

### **Present:**

K.J. Lawrence (Chairman), Miss R. Ezra (President), K.W. Dolton (Vice-President), R.C.J. Sawyer (Vice-President), G.R. Greed (Hon. Secretary/Treasurer), J. Blossom, M. Curzon, R. Grantham, N. Hewston, R.E. Oxley, S. Pyper, J. Trollope, Ms. R. Wiseman.

The Accounts for 1995 showed a small surplus.

Betty Risdon and Dr. Henry Quinque (France) were invited to become Vice-Presidents.

The Society has been invited to visit Chester Zoo on Saturday 13th July. Various ways of promoting the Society and increasing membership were discussed.



## NEWS & VIEWS

Three species of birds considered "lost" have been rediscovered recently in Indonesia. In May 1995 the Invisible Rail *Habroptila (Rallus) wallacii* was observed by an Indonesian ornithologist in a sago swamp on the island of Halmahera. Second in August 1995 two British ornithologists successfully rediscovered the Lampobathong Flycatcher *Ficedula bonthaina* in south Sulawesi. Finally a Caerulean Paradise Flycatcher *Eutrichomyias rowleyi* was recorded on Sangihe island (see item later in News & Views). The latter species was believed extinct while the other two are rediscoveries of species not seen in the wild for a number of years.

IBIS

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The *Glaucidium minutissimum* complex has recently been revised by Mark Robbins and Steve Howell in the Wilson Bulletin 107. They describe a new species. Subtropical Pygmy-owl *Glaucidium parkaeri* from the Eastern Andes of Ecuador and Peru where it was found between 1450 and 1975m in the canopy of subtropical forest. In addition, they explore species limits within the group and have recognised a further 3 species. Another related species has recently been described - Amazonian Pygmy-owl *Glaucidium hardyi*.

IBIS

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The Woodcreepers of South and central America fill the same niche as the Treecreepers of the old world. They are very similar in appearance and it was only the close examination of one specimen and further research by staff at the Museum Paraense Emilio Goeldi in Brasilia that this has now been classified as a separate species *Hylexetastes brigidae*.

BULLETIN OF THE B.O.U.

\*\*\*

Laughing Thrushes have long been a speciality of Beale Park. The collection consists of twenty species and in the last four breeding seasons over 70 young have been reared from nine species, several to second generation.

\*\*\*

The May 1995 Newsletter of the Megapode Specialist Group gives an account of the rediscovery of a major nesting ground for the Moluccan Megapode *Eulipoa wallacei*. The exact locality of the find has been kept secret but it is reported to be larger than any nesting ground previously known. The newsletter also contains up to the minute details of the various projects being undertaken by the group with this fascinating family and makes interesting reading.

MEGAPODE NEWSLETTER Vol. 9, No 1

\* \* \*

The last Japanese Crested Ibis *Nipponia nippon* native to Japan has died, aged 26, on Sado Island, shortly after being paired with a three year old female borrowed from China. It is not known if the five eggs from the pairing are fertile.

\* \* \*

The Aviornis U.K. 1996 Pigeon and Dove census is now under way. If you haven't come across a form in any of the avicultural journals, please write to Philip Schofield, Little Maen, 123 Prince of Wales Drive, Dorchester, Dorset.

\* \* \*

Surveys undertaken in the Mehoo and Pakhui Sanctuaries in Arunchal Pradesh between 1990-94 have confirmed both as new sites for the White-winged Wood Duck *Cairina scutulata*. Both locations have yielded two confirmed sightings plus local tribal people in the area of Pakhui report seeing the ducks on many occasions.

\* \* \*

A study of the Scaly-breasted Merganser *Mergus squamatus* has been carried out at Xiao Xingangling mountain in north eastern China. The mountain is one of the main afforested areas in north eastern China and is an important breeding area for the species. The Scaly-sided Merganser was frequently seen some years ago along the Tan Wang river and its tributaries, the Cue Ulan, Ann Tea and Yong Cue rivers. Numbers have been drastically reduced with deforestation, illegal hunting and human disturbance given as the main causes. Suggestions have been made that a nature reserve be established in the Yong Cue river area as this now seems to be the main breeding area.

A group of birds in extreme danger of extinction is the Hawaiian Honeycreepers. Some good news which hopefully augurs well for the future is the reported rearing of 16 Common Amakihi *Loxops virens* at the Keauhou Breeding Conservation Centre in Hawaii. All are destined for release.

\* \* \*

Details of a new species of Shearwater appear in the Bulletin of the British Ornithologists Club 115(2). It is a medium-sized species and has been named Mascarene Shearwater *Puffinus atrodorsalis*.

\* \* \*

In the same issue of the Bulletin, yet another account appears of a recently described species. This time it is the Bahia Tyrannulet *Phylloscartes beckeri*, recently discovered from remnant Atlantic forests in the vicinity of Boa Nova, southern Bahia.

\* \* \*

Recent surveys undertaken in Zaire have found additional sites outside the present known range of the Congo Peafowl *Afropavo congensis*. Locations 200-300 kms west have been found, one of which is close to where the species was originally discovered.

\* \* \*

Since August 1995, the Danish Ministry for the Environment has financed the Khao Nor Chuchi project in Thailand. It is working with villages to demarcate their land holdings in order to define boundaries between cultivated areas and forest, and to help establish the marketing of green vegetables which are in demand locally and in the larger towns. A conservation management board has been set up which will bring together all appropriate officials to consider in detail conservation and development activities at the site. Khao Nor Chuchi is one of the few locations where the highly endangered Gurney's Pitta *Pitta gurneyi* is still to be found.

\* \* \*



Preliminary results following an analysis of bird data from Chu Yang Sin nature reserve in Vietnam seems to indicate a much larger population of the rare Black-headed Laughing Thrush *Garrulax milleti* than first thought.

\* \* \*

Since 1988 Birdlife International has run a collaborative Recovery Programme with the Government of Seychelles and the owner of Fregate Island to conserve the endemic Seychelles Magpie Robin *Copsychus sechellarum*. The species reached a low of 17 birds some 6 years ago. After the implementation of a series of measures numbers have risen to 60, most of which are still found on Fregate, the largest rat- and cat-free island in the Seychelles.

However, on 11th September 1995, a single brown rat was discovered and subsequent details reveal that a small colony is now established. A programme is now being undertaken to eradicate the rats in-situ. If this fails more drastic measures will be adopted, even to the point of holding all birds in captivity until all rats have been destroyed.

\* \* \*

Many members will remember the Programme for Belize started in the late 1980's with the aim of raising money to buy and then to manage an area of rainforest in northern Belize. Over 20,000 people worldwide supported the undertaking and the goals are well on the way to being met. The success has led to the formation of the World Wide Land Conservation Trust which now, not only continues to oversee the efforts in Belize, but has also instigated two new projects; one on the Osa Peninsular, Costa Rica and the other on Danjungan Island in the Philippines. Further information can be obtained from W.W.L.C.T., Blyth House, Bridge St., Halesworth, Suffolk, IP19 8AB.

\* \* \*

Despite an embargo on exports to Iran, efforts by government officials and international researchers cleared the way for two Siberian Cranes *Grus leucogeranus* reared at the International Crane Foundation's headquarters at Baraboo, U.S.A. to be sent to Iran to bolster the western flock of this endangered species that has for two decades clung to a population of between eight and eleven birds. Only two other flocks are known, one that winters in India may be reduced to a single pair while the Chinese population of around 3000 winters on the Yangtze river.

The article by Dr. Karl Shuker (A.M.1992:27) on the attempted introduction of Tinamou on to Brightlingsea marshes at the turn of the century made interesting reading. The family as a whole was well represented in U.K. collections with between eight and ten species mentioned in various articles published in the Avicultural Magazine around that time.

Interest in this group has waned since then and until recently only the Chilean *Nothoprocta perdicaria* was present in the U.K. breeding in several collections. Vigour certainly seems to have dropped away in recent years and the introduction of new blood is vital if the species is to be maintained. Three other species are presently in the U.K., Crested *Eudromia elegans* and Red-winged *Rhynchotus rufescens* are kept at Beale Park while the third, kept privately in Norfolk has yet to be identified.

D. Coles

\* \* \*

Further to my article in News and Views, volume 98, no. 2 1992, the male Thick-billed Parrot *Rhynchopsitta pachyrhyncha* which was the remaining one of the pair which I obtained from San Diego Zoo in 1966 died in February this year.

This bird had been totally blind, first with cataracts and then the eyelids closed altogether for the last two years, but it had no difficulty in finding food and water in his aviary and in his cage in the bird room in which he lived for the last two months of his life.

K.W. Dolton

\* \* \*

The San Diego Zoo has a pair of Javan Rhinoceros Hornbills, housed in an enclosure at the base of Sun Bear Forest. They have also been successful in breeding these rare birds - five chicks have hatched since May 1992. This success was probably due in the large part of the care the keepers took in providing the birds with just the right nesting cavity, in which the female sealed herself up contentedly, just as in the wild.

ZOONOOZ

\* \* \*

The University of York Exploration Society's expedition to the Sangihe and Talaud islands in August, September and October of 1995 was very successful. The Expedition was put together by Jon Riley from the University of York and the area was suggested by Birdlife International.

The team consisted of five students from the University of York and five students from the University of San Sam Ratulangi (Manafu, Sulawesi), along with two aviculturists from the United States. The aims were to find and check the status of a number of endemic species that are considered rare and/or endangered as well as to do transects and point counts on the islands to check the avifauna and forests.

One of the members of the team saw the critical endangered Caerulean Paradise Flycatcher, the third time it has been seen in 100 years. Also on Sangihe the nominate race of the Red and Blue Lory *Eos h. histrio* was seen and which was thought to be extinct. 6 birds were seen and from a former trapper it was learned that possibly a total of 30 specimens of the Lory remain in the area. The Sangihe Hanging Parrot and the Elegant Sunbird which are considered endangered were seen in the southern part of the island where they are locally common.

On Karakelong, the largest island in the Talaud's, the sub-species of the Red and Blue Lory *talautensis* was found to be more numerous than originally had been expected. Also a single Grey Imperial Pigeon *D. pickeringii* was seen and it was a pet of one of the trappers we spoke with. We were also able to confirm that the Talaud Kingfisher *Halcyon enigma* which was formerly thought to be a sub-species of *Halcyon chloris* is indeed a full species as both species were seen in the same habitat.

Three of the most common birds in the Talaud's were the Black Sunbird, the Pacific Swallow, followed by the Grey-sided Flowerpecker and in fourth spot the Tree Sparrow.

Much more was seen and that will be related in an article to follow.

Jan Roger van Oosten (USA) and Jon Riley (England)  
(also sent in by Trevor Buckell (England))

\* \* \*

The Rose-crowned Fruit Dove *Ptilinopus regina* has been bred at the Territory Wildlife Park, Northern Territory, Australia in 1994 and 1995 writes Nick Atchinson in the January issue of Australian Aviculture. The article emphasises the importance of diet in maintaining these birds in captivity. Chopped fruit on its own is not enough. The birds have access to Wombaroo Lorikeet and Honeyeater food that they drink from a bowl. Trials using an imported fruit eating bird pellet have proved successful and will be incorporated into their regular diet soon.

\* \* \*



In September 1995 I visited Le Jardin des Oiseaux Parc Ornithologique de Spay situated 10 kms south of Le Mans off the N23 in Northern France. The Parc covers 6 hectares and claims to have 150 species. How long the Parc has been opened was not displayed, but it appears to be expanding from a rather small base. Certainly there could be more aviaries and they could be arranged more tastefully.

Various forms of ornamental and domesticated fowl roamed around. There was a single Emu, pairs of Rheas and Crowned Cranes, plus 3 Demoiselle Cranes. Various Ducks and Geese were present, plus pairs of Mute and Black Swans, the cock of which appeared to be very aggressive. Generally the ponds needed to have clearer water.

Parrots were well in evidence. Lories included Red-collared, Blue-streaked, Chattering and Green-naped. There was Stanley, Mealy and Golden-mantled Rosellas. Pairs of Orange-winged Amazons, Lesser Sulphur-crested Cockatoos and Peach-faced Lovebirds were seen. No Macaws were to be seen and the same applies to Owls. Some of the Parc is a wood and this could be ideal for Owls.

Amongst the Softbills seen were Emerald, Spree and Purple Glossy Starlings. Livingstone's and Violaceous Touracos, Indian Hill and Indonesian Mynahs. There were Bank and Pagoda Mynahs, plus a Rosy Pastor. Four Red-billed Blue Magpies had an aviary to themselves but it would be better if it was larger. Pairs of Black-throated and White-throated Laughing Thrushes were seen. I was pleasantly surprised to see a single Laminated Hill Toucan in an outside flight with a heated shelter with the heat on. The aviary was in the wooded section so in the autumn/winter period it obviously copes well with the weather.

There was two large walk through flights based on the Nissen hut design. One of these aviaries had various small seedeaters, Doves including Green-winged and a beautiful Red-collared Whydah, plus some of the aforementioned softbills. Each of these aviaries had a small shed where the birds could be fed or go inside in bad weather. There was hardly any nesting sites and both aviaries could have done with better vegetation and planting. The aviaries looked bare.

Looking at the birds being fed there was spiked fruit but the chopped fruit looked too big to me. No livefood was seen at all. Pellets were much in evidence but I didn't see any softbill food. The nectar given to the Lories had chopped fruit floating on top.

A new very high aviary was under construction, perhaps for Ibis, Egrets or Storks. Certainly the gardens could be improved with a little thought and planting of some new shrubs and trees. For the public more aviaries containing a greater selection would enhance the Parc and provide better value.

Apart from seeing 3 young Golden-mantled Rosellas, breeding appears to be rather poor in 1995. Most of the Parrotlike aviaries had a shelter where the birds are fed and where their nest box is always in view of the public. Several birds needed mates which in most cases ought not to be difficult if this was Britain. Perhaps in France it is not so easy.

The Parc is open every day from 9.30 until dusk. Cost of admission was 30 francs (about £4). There was a small cafeteria and benches to sit on. We were there from 9.30 for almost 2 hours and were the only visitors. If you are in the area a visit ought to be considered to see what progress is being made.

Stewart Pyper

\* \* \*

### **D.H.S. RISDON AWARD**

When Donald Risdon died in April 1994 he left the Society £500 in his will. This money has been put into the Society's general account. Your council, and in particular Mike Curzon who had worked with Donald Risdon for over 30 years, wanted to do something to ensure that his memory would not be forgotten. Donald was at his death a vice-president and had been a member for 59 years. He was a great supporter of the Society in many ways including contributions to the *Avicultural Magazine*.

It was decided that an annual award be given for the best article to appear in *Avicultural Magazine*. Members at the end of each year will be asked to contact the secretary to advise their choice. The council will then consider and adjudicate. The first year is to be 1995 and therefore members are asked to send in their choice. Length of article is not important as a single page can contain a wealth of new information. The seven talks given at the Centenary Celebrations are all eligible as individual articles. Overseas articles are, of course, included.

The award for 1995 is a painting by council member, Malcolm Ellis. Please show your appreciation for all the Donald did for the Society by taking part. It is also hoped that this annual award will encourage more contribution. to your world famous magazine.

## AVICULTURAL SOCIETY NEWS

The summer visit is on Saturday 13th July 1996 to Chester Zoo.  
Conducted tour of the Zoo. Members and guests welcomed.  
For full details see loose leaflet inserted in this issue.


The Society is having a small stand at Birdworld, Nr. Farnham  
Surrey at their Avicultural Day on Sunday 23rd June.

The Society is having a small stand at the Tropical Bird Gardens, Rode,  
Somerset on Saturday/Sunday 6th/7th July at the Parrot Society weekend.

The Society may have a Stand at the National Exhibition of Cage and  
Aviary Birds at the N.E.C. Birmingham on Saturday/Sunday 30th November/  
1st December.

\* \* \*

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# AVICULTURAL MAGAZINE



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## THE AVICULTURAL SOCIETY

The Avicultural Society was founded in 1894 for the study of British and foreign birds in freedom and captivity. The Society is international in character, having members throughout the world.

Membership subscription rates per annum for 1996 as for 1995: British Isles £18.00: Overseas £21.00 (plus £6.00 for airmail). (U.K. funds please). The subscription is due on **1st January of each year** and those joining the Society later in the year will receive back numbers of the current volume of the AVICULTURAL MAGAZINE.

Subscription, changes of address, orders for back numbers etc. should be sent to:

THE HON. SECRETARY AND TREASURER, THE AVICULTURAL SOCIETY, % BRISTOL ZOOLOGICAL GARDENS, CLIFTON, BRISTOL, BS8 3HA, ENGLAND.

Enquiries regarding membership should be sent to:

THE MEMBERSHIP SECRETARY, Stewart Pyper, 21, Primrose Hill, Nunney, Frome, Somerset, BA11 4NP.

THE AVICULTURAL MAGAZINE welcomes original articles that have not been published elsewhere and that essentially concern the aviculture of a particular bird or group of birds, or that describe their natural history. Articles should be preferably typewritten, with double spacing, and the scientific names as well as the vernacular names of birds should be given. References cited in the text should be listed at the end of the article. Line drawings should be in Indian ink on thick paper or card; black and white or colour photographs which illustrate a particular point in the article will be used where possible and should be clearly captioned. If authors wish their eventual return, they must say so when submitting the article and write their name on the back of each photograph.

## ADDRESS OF THE EDITOR

Malcolm Ellis, Hon. Editor, The Avicultural Magazine, The Chalet, Hay Farm, St. Breock, Wadebridge, Cornwall PL27 7LH, England.



# AVICULTURAL MAGAZINE

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## **BREEDING THE RED-TOPPED AMAZON** *Amazona rhodocorytha* AT PALMITOS PARK

by Rosemary Low

The three Amazon parrots endemic to south-east Brazil are currently considered to be endangered, as are the endemic conures and the two endemic *Touit* parrotlets. Of the three Amazons, only the Vinaceous *Amazona vinacea* is regularly bred in captivity. The other two, the Red-topped or Red-browed *A. rhodocorytha* and the Red-tailed *A. brasiliensis* have never been well represented in collections outside Brazil.

*A. rhodocorytha* has several common names, therefore I prefer to use the scientific name, to avoid confusion. Whichever name one chooses, there is no denying that this is a very beautiful bird. The head coloration is variable; the shade on the forehead and crown is a soft orange in some; the feathers of the pileum (top of the head) are plum-coloured and green in most birds. The feathers of the nape and mantle are margined with plum or grey. The cheeks and throat are also variable - usually they are a soft and pleasing shade of blue, but are green washed with the same shade of blue in some birds. The lores are yellow. Generally this yellow extends downwards on to the throat in females, whereas in males it is restricted to the lores.

There are three other features which add to the beauty of this Amazon. One is the pink tinged upper mandible. Then there are the eyes, which are large and appealing, and lack the aggression of so many Amazons. Finally, there is the tail, which is beautifully marked with red. This species is about 36cm (14in) in length and weighs in the region of 430-460g. One of our females weighed only 375g and the largest male weighed 465g.

On the subject of weight, it is important to note that this Amazon in particular, easily becomes overweight. The quantity of fattening foods, such as sunflower seed, must be restricted. A diet which is high in fresh fruits and vegetables is recommended. All fruits are relished with orange the favourite. Carrot is also greatly enjoyed.

This Amazon is found in one of the regions most ravaged by deforestation - with more endangered endemic species than almost any other area of the

world. The forests of the south-east coast of Brazil have been replaced largely by sprawling cities such as Rio de Janeiro. *A. rhodocorytha* is already extinct in that state and occurs now only to the north in Espirito Santo and Bahia. With a population estimated at only 2,500 it is one of the most endangered parrots of continental South America.



Rosemary Low

*A. rhodocorytha* is one of the most beautiful of the Amazons

There is a local demand for this species as pets and as recently as a decade ago they were even sold as food. It is rare in captivity outside Brazil. Strangely enough, perhaps the only country in which it has been bred consistently, albeit in small numbers, is in the UK. Pairs were made up from a very small number of birds imported at different times, perhaps mostly single birds which came in on ships. I know of several such birds which were bought in pet shops from people who had no idea what they were.

A studbook has been established for this species - an important step in securing the survival of this Amazon in aviculture, as breeders are few and birds are widely scattered. I strongly urge all fortunate enough to keep this Amazon to contact the studbook holder, Roger Sweeney, at Loro Parque, Puerto de la Cruz, Tenerife.



Palmitos Park is a member of this studbook and in the year of the studbook's formation, the first *rhodocorytha* chick hatched. The larger Amazons, with the exception of the Double Yellow-head *A. ochrocephala oratrix*, are not easy to breed. The Mealy *A. farinosa* is seldom bred - and the Mealy and *rhodocorytha* are very much alike in temperament. Compatibility is extremely important. Only two of our five pairs attempted to breed. Hopefully this situation will be corrected, as all the pairs are due to be introduced into a new complex which features an enormous aviary in the centre. There they will be able to fly for some months each year and choose their own partners.

The two pairs which attempted to breed are undoubtedly the most compatible. One female laid two clutches last year, the first of two and the second of three eggs, all of which were, sadly, infertile. They measured 40.2mm x 31.8mm and 42.7mm x 32.8mm (first clutch), and 41.8mm x 29.5mm, 43.9mm x 31.0mm and 42.5mm x 32.0mm (second clutch). The male and female used to be housed in adjoining cages with different partners. In September 1992 each spent three weeks trying to preen the other's head through the wire, so the following month they were put together. No eggs were laid until last year when the female laid her first clutch at the end of April.

The other pair is one of the most compatible pairs of Amazons I have ever observed. They are not housed with the other Amazons. The front of their suspended cage was by my kitchen window and the back of it overlooked my bathroom window. They are inquisitive and liked to see what was happening in my kitchen. My Yellow-fronted Amazon *A. ochrocephala* sat on her stand by the kitchen door and watched them daily and often joined in with their chortling calls. They provided me with a tremendous amount of pleasure, with their cheery vocalisations and constant displays of affection towards each other. The male's frequent imitations of a hen about to lay, suggest that he was reared where there were chickens running about.

The extreme affection which the male and female demonstrate towards each other is so unlike that of many Amazon pairs. They spend hours mutual preening and often preen each others' heads simultaneously. They can also be seen vent-preening - an activity which is not common in Amazons (unlike cockatoos, for example). They often play together, hanging from the roof of their cage. They swing by one leg and with the free foot grasp the foot of their partner. This affectionate behaviour is seen throughout the year. Before the breeding season, for several weeks there are prolonged sessions of copulation which can occur at any time of the day. Less tame pairs of Amazons usually mate in the early morning and probably also in the late afternoon, when there is little disturbance.



In 1992 the female's eggs were infertile. In mid-February 1993 I watched the female crouching to invite copulation, but it was two weeks before the male was seen to respond. His initial attempts were unsuccessful, as he obviously lacked experience. However, by 6th April the female was incubating two eggs, both of which proved to be fertile. The chick in the first egg died not long before it was due to hatch. On 29th April I found that the other egg had been opened by the parents. At first I thought this was due to inexperience, as this is not uncommon with Amazons. However, it was soon obvious that the chick could not hatch unaided. The inside of the egg was very dry. I placed it in a hatcher with high humidity and the chick hatched the following day. As soon as I saw it, I knew it would not survive. It looked unhealthy and dehydrated, and lived only three days. A bacterial infection was suspected.

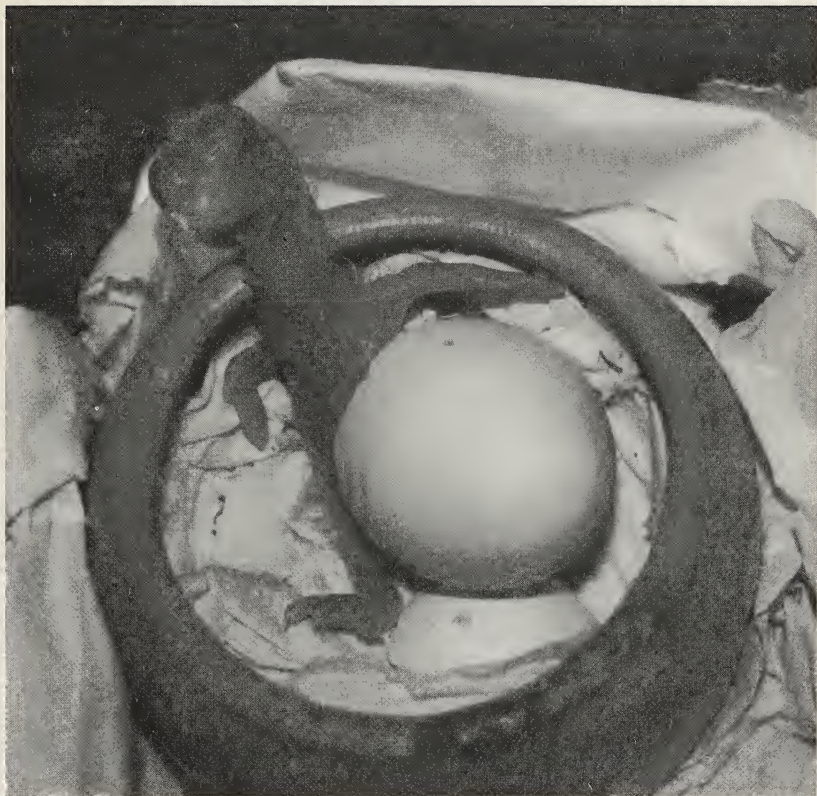
In 1995 the first egg was laid 22nd April. It was enormous - probably the largest Amazon egg I have ever seen. I inspected the nest daily for the next five days or so because the female left the nest quite frequently. It seemed that one huge egg was to replace two normal ones! When she started to incubate in earnest she became aggressive and nest inspection was impossible for some while. When I could look, I was surprised to see a second egg. The first hatched on or about 20th May. When the female left the nest on 22nd May I suspected that something had gone wrong. Sadly, inspection revealed a dead chick with the upper mandible removed. I suspected that the female had killed it due to inexperience but the injury could have occurred after the chick died. It was impossible to tell.

I was very disappointed but determined the same fate should not befall the next chick. I took the other egg, which was pipping, and immediately placed it in a hatcher. Also in the hatcher was a Pesquet's Parrot *Psittichas fulgidus* egg. On the evening of the next day both chicks were calling loudly. Next morning, 24th May, I was greeted by the sight of two beautiful chicks both of which weighed 18g. There the resemblance ended. The *rhodocorytha* had yellow down on the back and nape only; the Pesquet's was covered with white down.

I hand-reared the Pesquet's but the *rhodocorytha* was put straight out. I was fortunate in that one of our most reliable pairs of Amazons had hatched her first chick two days previously. This was a pair of Finsch's *A. finschi* which, in the past, I regularly used to feed Hawk-head *Deroptyus accipitrinus* chicks along with their own (until the age of three weeks) and to foster other Amazon species (even to independence).

That day or early the next, the second Finsch's chick hatched; the third hatched on 28th May. They were then feeding four chicks. It was to their great credit that every chick was equally well fed. The *rhodocorytha* was so large I feared the smallest *finschi* chick might have to be removed but this was not necessary.

I weighed the chicks when I could but after a few days the male clearly showed his disapproval of this by rushing aggressively to the nest entrance. I was therefore apprehensive about weighing them very often and gave up my hope of regularly weighing the *rhodocorytha*. By the time the chicks were four weeks old they filled the interior of the nest-box and the female entered only to feed them. In spite of the fact that nest inspection was carried out from the service passage where the birds could not see me, they always knew as soon as I opened the nest inspection door. On most days I had little more than a glimpse of the chicks before the male came to voice his disapproval.



Rosemary Low

**A. *rhodocorytha* chick hatching at Palmitos Park**

There is a real danger of displaced aggression as such times, i.e. the parent cannot attack the source of the danger, so he attacks the nearest chick instead. The information I recorded on the development of the *rhodocorytha* was therefore sparse.

Weights were as follows:-

day of hatching	18g	
day 6	83g	(full crop)
8	125g	(full crop)
10	160g	(full crop)
13	211g	(nearly full)
16	256g	(empty)
21	384g	(nearly empty)
25	441g	(nearly empty)
28	466g	(nearly full)

Partly due to a lack of handling and perhaps also due to a natural wildness, the *rhodocorytha* was too difficult to handle after this age.

By eight days old its feet had become grey, at 10 days the lower mandible was grey at the base and at 13 days the chick was ringed with an 11mm ring. The chick seemed large for its age and very solid. At 15 days the lower mandible was darker at the base and the eyes were slitting.

At 21 days the ears and eyes were wide open. At 25 days the chick was large and sturdy and weighed 441g - and had already exceeded the adult weight. The feet were large and very strong. Most of the wing feathers, except the primaries, had erupted, also the thigh feathers. The head was still bare, with feathers just about to break through the skin. At 28 days there was a blush on the forehead where the red feathers were growing beneath the skin. The tail feathers were through the sheaths, and were about 5mm long.

The young Amazon feathered up very quickly; less than two weeks later it was fully feathered but had a shorter tail. By then the beak had the pinkish tinge of an adult. It left the nest on 18th July at the age of 55 days. I was surprised to see it perched confidently on the food tray at the front of the aviary with its foster parents. The three Finsch's Amazons left the nest on 14th, 19th and 21st July.

All four young ones could sometimes be seen in a line on the perch at the back of the aviary. They were all in perfect feather and quite beautiful. Throughout the rearing period, they have not given me a moment's concern. Every year this perfect pair of birds rears its young thus - plus any foster chicks added to their nest. Their only small fault - and this occurs solely out of concern for the safety of their young - is their behaviour when someone passes the aviary after the young have fledged. Because they are not tame, a person is seen as a threat to their young. Therefore, not being able to attack the person, they lunge at the nearest youngster. However, no harm has ever occurred.





Rosemary Low

**At only 25 days old the chick weighed 441g**

The rearing food consists of the normal mixture of seeds, fruits, vegetables, cooked maize and beans. Fresh corn is given when available (on average, every other day during the rearing period) and each day they get a homemade rearing food consisting of carrot, hard-boiled egg and wholegrain bread. They eat everything offered.

It was a long wait to rear our first *rhodocorytha* - making it all the more satisfying. Others with this species have also had to exercise patience. However, I believe that events in the decade to come will see this species more firmly established in aviculture. In view of its precarious status in the wild, it is extremely important that this should be so.

*The above article was written while Rosemary Low was Curator of the breeding centre at Palmitos Park. The park has since been sold and the breeding centre is no longer in operation as such. However, the pair of A. rhodocorytha are still there and had two chicks in the nest in June 1996. Rosemary Low has returned to the UK to live and is concentrating on writing and looking after her collection of lorries.*

## IVERMECTIN IN THE TREATMENT OF RESPIRATORY MITES

by Deirdre Gibson

A pair of East African Superb or Spreo Starlings *Spreo superbus*, in apparently good condition, were obtained during mild weather at the beginning of November and put straight outside. Two weeks later night temperatures fell sharply and they were seen to sneeze occasionally. They were brought inside, where the male rapidly got worse.

Dry sneezing in the absence of mucous and other respiratory or ocular implications is a classic symptom of lung mites. This may go on to include a loud whistling wheeze or a dry cough. The connection between the onset of cold weather and the appearance or recurrence of symptoms was obvious. This had also happened with a Gouldian Finch *Chloebia gouldiae* which was kept outside in an unheated greenhouse, built against the house window. It too had appeared healthy, but after a few cold nights, the bird's respiratory whistling could be heard indoors. This finch successfully responded to dichlorvos (Gibson, 1978).

The pair of Spreos were placed beneath an 18.6% dichlorvos pest strip for two periods of a week, with a week in between. This made no difference whatsoever. A tracheal swab from the male confirmed that it did indeed have mites which were not speciated. The female continued to sneeze only very occasionally.

Some ivermectin was obtained but no specific information was available for its use in the treatment of birds - only the dose for cattle (amounting to 0.2mg/kg) was given in the package insert. All doses in this article are given in the customary mg/kg and refer to the actual amount of ivermectin, not the liquid being administered. It should be noted that in some articles doses are given in micrograms, which may be misread and cause confusion.

The male Spreo, weighing 70g, was given various doses, from 0.14 up to 1.07mg/kg, with no effect. Then six doses of 1.8mg/kg were administered over 33 days, also with no effect. Because handling the birds brought on increased and quite severe respiratory distress, all the above doses were injected into mealworms, which were then fed to the birds. The innards of mealworms are under high pressure and injecting them successfully takes a little practise. I inject the larvae slowly over several seconds, then withdraw the needle very slowly and wait to make sure none of the dose comes back out. Alternatively, the tail can be nicked off the mealworm, which depressurises it, but it also shrinks, leaving less room for the dose.

It is easier to dose birds directly, but if this method is used, it is important to get well past the epiglottis. It is also important to avoid touching the

tongue, for like a lot of medicines, ivermectin tastes foul. For this reason, birds will not eat mealworms which have leaked and may remain suspicious of them for up to 12 hours or more.

Things had reached to serious stage with the Spreos. The male was sneezing between two and five times in succession about every three minutes. The 69.5g female was not so bad, though her rate of sneezing had also increased. Belatedly, some House Sparrows *Passer domesticus* and European Starlings *Sturnus vulgaris* were caught for dosing experiments - something which should have been done at the beginning. All of these were dosed directly down the throat, using a 1cc syringe. The two European Starlings were each given 21.5mg/kg. This did not slow them down in the least and they took off at high speed two days later.

The House Sparrows, all males weighing between 26 and 28g, were given doses ranging from 13.17-76.92mg/kg - the latter being 385 times greater than the dose recommended for cattle! One female was left untreated to monitor feeding, etc. The bird given the lowest dose was visibly unaffected, but scarcely ate. Twenty-four hours later, it was given a further 15.25mg/kg (total 28.42mg/kg) and within three hours looked very ill. It sat fluffed-up on the perch or on the floor, usually with its eyes shut and shivered occasionally. Ivermectin does not clear the system within a day, the half-life being 22-28 hours in humans (though no doubt less in birds), so the symptoms were due to the accumulation of about 20-22mg/kg. This sparrow hardly ate at all during the two days of dosing but on the third day recovered completely - eating well and flying against the bars. Along with the female, it was kept for a month then released, still in good condition.

The others given single doses ranging from 38.5-76.92mg/kg, all showed the above symptoms, except that one did not fluff-up. None appeared to be any better or worse than the others, in spite of the wide dose range. Like the first bird, they were all fine one day after treatment and took off rapidly when released three days later. The Spreos were then treated with more confidence. After the earlier months of futile treatment with increased doses up to 1.8mg/kg, the male's symptoms disappeared the day after a single administration of 5mg/kg. The female, which had become much worse by that time, did not respond, and needed 7.2mg/kg, after which her symptoms disappeared overnight. It was then the end of March and the pair went on to have three nests of chicks in the summer. At the end of the year they were still free of symptoms.

Other birds on the premises (which came originally from China, via California) included a 17g Siberian Blue Robin *Erithacus cyane* with a slight infection, judging from its sporadic and light sneezing. This bird was eventually, in March, given 14.7mg/kg. Like the male Spreo, it did not respond to many lower doses given over a four month period. Although



the symptoms abated, it recommenced sneezing lightly and infrequently at a friend's place about three weeks later (the exact time was not recorded).

A female Scarlet Minivet *Pericrocotus flammeus*, with several problems, was neither affected nor cured by 11.7mg/kg. Its sneezing finally abated when it was given 15.6mg/kg, though, it became ill for a day, just like the sparrows, and sat with its eyes shut and threw-up its last meal. This bird died from other causes soon afterwards.

In the meantime, a letter from the manufacturer, Merck, confirmed that no 'official' information was available on the use of the product for birds and because of this would make no recommendations for Ivermectin (its trade name for ivermectin) in this regard. In spite of this, ivermectin is used in veterinary surgeries around the country to treat respiratory mites, often by the 'spot' method. The absorption of this chemical is about the same, whether given by intramuscular, intraperitoneal or subcutaneous injection, oral dosing or even by skin spot treatment. So in cases where it is not of dire necessity, injecting birds is too traumatic and quite reprehensible treatment. Merck supplied information from a book by Cambell which quoted some papers on mites - an interesting one being that of Grimm and Centurier, 1986, who found that the airsac mite (*Cytodites nudus*) was only knocked-out in pheasants by a dose of 50mg/kg.

Some reasonable conclusions can be drawn from this very small trial, the most worrying one being that there is a very resistant (to both ivermectin and dichlorvos) strain of respiratory mites. It is puzzling that birds from divergent sources should have such resistant mites, but these could have been picked-up in a government quarantine station or a dealer's premises.

Apparent cures cannot be assumed by the immediate cessation of symptoms. The mites can be suppressed by subclinical doses of medication and symptoms ameliorated temporarily, so a follow-up of at least one month is prudent. The breeding success of birds is not affected by 7.2mg/kg of ivermectin and probably not by any sublethal dose (neither was breeding affected by dichlorvos). The point at which small birds weighing 16-33g become visibly affected by ivermectin is plus or minus 15mg/kg. Although higher doses make the bird ill, recovery is complete within one or two days. Ivermectin has a very wide safety margin for birds. Even a massive dose - 385 times the cattle dose - is not lethal.

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## BREEDING AND BEHAVIOUR OF THE NORTHERN CARDINAL

by Jeffrey Trollope

*Cardinalis cardinalis* (formerly *Richmondena cardinalis*) is probably the most popular and well-known of the New World passerine species. In most general ornithological literature, Cardinal, was formerly used as a substantive name for it. Other names include Common Cardinal, Virginian Cardinal, Red Cardinal and Scarlet Cardinal. In the USA it is also known locally as the Redbird and Cardinal Redbird.

The New World *Emberizidae* has been the subject of much taxonomic revision and debate. *C. cardinalis* is often included in the Cardinal-Grosbeak group in the subfamily *Cardinalinae* (formerly *Pyrrhuloxiinae* and *Richmondeninae*). Gruson (1976), Howard & Moore (1980), and Walters (1980), gave the group separate subfamily status within the family *Emberizidae* and Clements (1981) also listed them with the *Emberizidae*. De Schauensee (1970) included the genus *Cardinalis* with some 53 genera in the family *Fringillidae*.

The first breeding in the UK was probably in 1834. Since then it has been bred quite a number of times, although it would appear that few breeding reports have been published in the UK. One of the most detailed accounts is that of Gjessing (1956), who bred them in Norway. My account describes some aspects of the breeding and behaviour of captive *C. cardinalis* between 1971 and 1977 in southern England.

This species is approximately 15-24mm (6-9.5in) long and sexually dimorphic. The bill is large and the male's is red in colour. The head crest is well developed and the entire plumage is red, except for a black patch at the base of the bill. The female's bill is a paler shade of red than the male's. Her plumage is light brown or yellowish brown, paler below. There is a faint flush of red on the head, wings and tail, and sometimes on the under-tail coverts. There is geographical variation in colour and size, with some 18 races recognised, depending on which taxonomic list is consulted.

### Distribution, introduced distribution and habitat

Canada, central and eastern USA, Mexico, south to Guatemala. The Northern Cardinal has since the turn of the century extended its breeding range northwards into Canada. It first nested there in 1901 at Point Pelee, Ontario. The species breeds now in Ontario and southern Manitoba. It

has also been recorded in Quebec, southern Saskatchewan and Nova Scotia. In the USA a mixture of races have been introduced into south-western California. They inhabit woods, parks, gardens, cultivated areas, swamps, cane breaks and semi-desert regions. Other successful introductions have taken place in Bermuda and the Hawaiian islands. In Bermuda it was once common, but in rural areas numbers have declined due to urbanisation and loss of cedar forest. It is established on all the larger Hawaiian islands. It is regarded as a nuisance because of the damage it causes to fruit (Long, 1981).

### **Breeding**

Aviary birds in the UK usually start nesting in April or May. A breeding pair I had, built their nest and laid in late May for five consecutive seasons. Captive birds will rear three broods. In the wild three or four broods are reared sometimes. The cup-shaped nest is made of thin twigs, weed stems, grasses, bark fibres, vines and rootlets, and sometimes paper and rags, etc., and lined with rootlets, fine grasses and hair. The site is variable, though usually in a shrub or vine tangle. The nests built by my birds were deep cups, consisting of a few twigs, dried grasses and stems, lined with finer grasses and once, a small amount of dried moss. The site was always in a clump of cut gorse hung up in the aviary. On many occasions the same nest was relined and used again for the next brood.

The female plays the main role in the building but I have often seen the male carrying material to the nest site. The ground colour of the eggs is white or slightly greenish and they are speckled and spotted, and have small blotches of medium to dark brown, rarely reddish brown and paler purple or grey. The many clutches laid by one female in my aviaries were consistently a very pale bluish colour, sparsely spotted with brown and ashy brown concentrated at the larger end. The clutch size is 3-4, rarely 2 or 5.

Incubation is carried out by the female but the male has been seen covering the eggs for brief periods, when the female is off the nest, feeding or bathing. The incubation period is 12-13 days. The nestlings have orange skin and blackish-grey down. The gape is red and the gape flanges cream coloured.

The female broods the chicks very closely for the first five to six days. The young are fed by both parents. The chicks leave the nest as early as ten days old, at which stage they have little or no tail growth but have short crests. The chicks can reach the top perches in an aviary, but their flight is



limited and perching uncoordinated. The female will lay the next clutch within eight to ten days, sometimes less, after which the male will undertake most of the feeding of the first brood. The female has been seen to feed them when she leaves the nest and the young will roost close to the nest while she is incubating. On several occasions I have seen the chicks sitting and standing on the female's back while she is sitting. The male and female will feed the first brood at the nest during the incubation of the second clutch. The young can feed themselves about 14-16 days after leaving the nest. They can be left in the aviary until the second brood has hatched, after which the male will sometimes begin to harass them (Trollope, 1992).

The young are fed almost exclusively on livefood for at least the first eight to ten days. I gave them a mixture of mealworms and pupae, cleaned small maggots, house crickets and stick insects of various sizes, as well as the usual seed mixtures, soaked seed and greenfood. The 'commercial' livefood was supplemented with livefood that I collected to give them the variety which is so essential. The adults will sometimes feed the young on a softfood mixture and they are very fond of tomatoes, apples, peas and leaf buds.

In six of the seven breeding seasons recorded, reproduction progressed without incident, until the young were independent of their parents. At this stage, at least one young bird died. A curious feature of these mortalities, was that the survivors always proved to be males. By contrast, the young died when fledged during the seventh year. It was a very poor year for collecting 'wild' invertebrates, which because of the greater variety would have been superior to the limited commercial livefood available at the time.

## **Behaviour**

Nesting and copulation are preceded by courtship feeding, when the male approaches the female with an insect or other choice morsel, which she often solicits with a begging posture with shivering wings. Sometimes the pair will just touch bills before courtship feeding, and the female having accepted the offering, will feed it back to the male. The nuptial display consists of the male chasing the female while singing loudly. When she perches, he approaches her with his crest erect, and the head and neck are swung from side to side (during which the male continues to sing), and the head is sometimes lowered then raised. The male will also elongate his body and slip sideways along the branch towards the female. This posture and movement is often followed by copulation, sometimes after courtship feeding.

These cardinals are avid sunbathers and rain-bathers. During heavy rain I have seen them perched near the top of a heavily-leafed shrub, singing loudly, preening themselves and rubbing their plumage on the wet leaves. When I put ant pupae in the aviary, they would 'ant' for some time, rubbing the adult insect through their plumage and often ate the ants as well as the pupae.

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*Jeffrey Trollope has been awarded The Avicultural Society medal for the first UK breeding of a number of species, most of them seed-eaters, and is the author of a popular book on keeping and breeding seed-eating birds. He is on The Avicultural Society Council.*

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## BREEDING THE LAUGHING KOOKABURRA

by Stewart Pyper

The Laughing Kookaburra *Dacelo novaeguineae* which measures about 42cm (16½in) long is the largest member of the Kingfisher family coming from Australia and must be one of the best-known Australian birds. It has a stout body, an enormous head and a relatively short but powerful bill. When it raises its crown feathers the head appears even bigger. The upper mandible is dark and the lower mandible is horn-coloured. Youngsters have a uniformly dark coloured bill. The head is creamy white with a brown stripe along the top. The back, wings and tail are mainly various shades of brown and grey. The lesser wing-coverts are marked with light blue. There is also some blue on the lower rump, which is more noticeable on my male. The underparts are buffy cream. Those of my male are darker than those of the female.

This species has been kept in captivity for over 100 years. London Zoo is credited with the first breeding in the UK in 1905. Until Australia introduced an export ban in 1960, it appears to have been exported quite frequently. By the end of the 1970s it was kept in only a few collections. Most were in zoos. However, during the 1980s several of these collections started to breed Kookaburras. The price fell from £1,200 (approx. US\$1,800) to about £300 (approx. US\$450) for a pair of surgically sexed youngsters. Surgical sexing has played a considerable part in this success, as it has with many other species of birds. I had always wanted a pair but the price put them out of my range. In 1988, The Tropical Bird Gardens at Rode reared a single chick which was sexed and found to be a female. It is tame, but has the habit of jumping on peoples' backs when they least expect it to. More were bred later and towards the end of 1992, my friend Mike Curzon, a director of Rode, asked if I was interested in two females? I said, I was, but needed time to provide suitable accommodation, as they cannot be kept with smaller inmates. My father had for many years kept a small stud of light yellow budgerigars, but had difficulty acquiring fresh blood and decided to part with the remaining birds. His birdroom flights were dismantled and an aviary was built which measures 2.10m x 4m x 2.1m high (6ft 10in x 13ft x 6ft 6½in high). Attached to it is a shelter 2.1m x 80cm (6ft 10in x 2ft 7½in) built from concrete blocks, for roosting and where the birds are fed. The shelter has a corrugated plastic roof, partly covered because there is a street light above it. The aviary floor is half sand and half 16mm (approx. ½in) limestone chippings, which make it easy to maintain. There is a 75cm (29½in) circular dish for bathing.

The birds were put into their new accommodation on Saturday 29th May 1993 and settled in immediately. They were offered chopped day-old



chicks sprinkled with SA37 vitamin supplement occasionally. A mouse is given to them from time to time and they have had a frog which they found difficult to digest. They eagerly consume mealworms. At first softbill food was sprinkled on the chicks, but was soon discontinued as they appeared to remove it. At times a few sliced grapes are given by hand and are eaten.

In 1993, a male was bred at Rode and Mike Curzon asked to swap it for one of my females. This took place Saturday 17th November. I kept the female which was bred at Rode in 1988 and when the young male was put in with her, they took to each other immediately.

Their name is well deserved. They have a long, loud call and when one begins the other generally joins in. They throw back their heads and stand almost vertically on their perches. Their calling arouses the interest of people walking past outside. One couple were reported to have told their friends that they had heard Kookaburras calling and thought they were on holiday in Australia! In the summer they call early in the morning and unless one has sympathetic neighbours, or none at all, they are not birds to keep in a built-up area, where their owner could be inviting trouble.

My two can instantly be distinguished from each other, as the male is smaller and has a darker head and a duller coloured breast than the female, which has a ring on one leg. The male is not as tame as the female, he will accept food from the hand but cannot be stroked. The female enjoys this at times, but can give a sharp bite. She dislikes my hat and on various occasions has flown at my head with the intention of attacking it. When the hat is offered to her, she will refuse to part with it for several minutes, until finally it becomes too heavy for her. John Meeke, who used to work at Rode, said that at times Kookaburras will fly straight at a person's head for no apparent reason. I have not found this to be the case with my birds. The male will at times crash about. In 1995, he developed the habit of flying at the wire netting and attacking the wooden fence panel behind it, always at the same point, where there is now a small hole. Even the female has been seen doing this.

Both enjoy the sun and will stretch out one wing at a time when sunbathing. This is usually done on a perch, but occasionally on the floor. When bathing they get really wet and at times have difficulty flying back up onto the perches. They will sit out in the rain with similar results sometimes. At first I was concerned but soon came to accept this as a regular occurrence. In the winter I keep an eye on them, as they will sometimes take a bath after the ice has been broken and fresh water put into the dish.

Their shelter is not heated and therefore is not frost-proof. Most Kookaburras do not have access to a heated shelter and this does not seem to create any problems, such as frost-bitten toes. Their food freezes sometimes, but fresh food is put in about 7am each day.

There are two plant boxes in which I hoped to grow some foliage to help screen the wooden panel at the back of the aviary. Only partial success can be reported, as at times they pull out some of the grass. A honeysuckle has at present remained in place for about four months. Mint has grown on the floor in one place, as they seem to dislike the taste of it. A clematis proved great fun and was pulled about until all that remained was a root, and this too was pulled out.

When planes go over both birds sit very still looking up at them. Hot air balloons caused panic at first, but this may have been more to do with the fact that as the gas is released there is a loud hissing noise, especially when the balloon is low down.

Rode loaned me a nest-box and a replica was made of plywood. It is 30.5cm square x 38cm deep (12in square x 15in deep), with an entrance chamber 15cm x 10cm x 91.5cm deep (6in x 4in x 3ft deep). It has a 4cm (1½in) landing area. An upturned turf was put inside the box, which was screwed onto a pair of brackets fitted to the side of the shelter. The box is 1m (39in) above the ground and faces west. Upon the box being installed both birds inspected it and over the next two weeks most of the earth was removed, after which the female soon started to spend a lot of time inside. Mating was not observed by me, but was observed by my father. I have subsequently witnessed mating and on two occasions saw the male hold the female's head in his bill. It was hoped that eggs would be laid and sure enough, 10th May 1994, the first egg was seen, followed by a second early in the evening on the 12th May and a third two days later. The female became very protective and when anyone entered the aviary would fly around, and on one occasion, landed on my father's head and attacked his hat, just as she had done to me on various occasions. The eggs, which were white, were not checked to find if they were fertile and were not measured. As the male was under 12 months old, there was some doubt as to whether they would be fertile.

Incubation was undertaken by both birds, with the female doing the major portion. The 6th June an egg shell was seen on the aviary floor beneath the nest-box. The 9th June more egg shell was removed. I had been told that when there were young, I needed to cut the day-old chicks into very small pieces to make it easier for the young to digest them. The food, which was dusted with SA37, appeared satisfactory and consumption increased. When the parents were off the nest, from outside the aviary we could see two chicks and noticed how ugly they looked. Their growth appeared to be satisfactory. When both parents were in the box with the young, it must have been very crowded. On the evening of the 26th June, I was amazed to see there was a third youngster. The young male had done his job well. Generally the female roosted with the young in the box.

On the 9th July the first youngster left the nest, followed at two-day intervals by the others. The weather was dry and the water dish was soon partly emptied. The young had a tendency to thrash around but no damage appeared to be done. They were independent by the 31st July, 21 days after the first youngster had left the nest. The youngsters were, as expected, smaller versions of their parents, except that the buffy cream was very dirty looking and their bills were all brown. The young were taken to Rode on Saturday 13th August, as a buyer had been found for them. The adults were then mine.

The female seemed very annoyed by the removal of the young. The box was taken out to be cleaned and a week later was put back with a new upturned turf, and although it was immediately investigated and some of the earth was thrown out, nothing further happened in 1994.

The winter of 1994/95 was mild and events in 1995 unfolded as follows:-

Monday 10th April	First egg seen at 11.40am.
Wednesday 12th April	Second egg seen at 6.40am.
Friday 14th April	Third egg seen at 6.40am.
Saturday 6th May	Half an egg shell seen on the ledge of the nest-box.
Monday 8th May	Egg shell seen on the aviary floor. My father put in a few mealworms to see what would happen and saw them being taken into the nest-box.
Wednesday 10th May	I saw at least one chick.
Monday 15th May	I saw two chicks.
Tuesday 6th June	Both chicks were well feathered and would, I thought, leave the nest-box by the weekend.
Sunday 11th June	First youngster seen in the flight at 7.53am.
Tuesday 13th June	Second youngster seen in the flight at 7.50am.
Saturday 17th June	A very wet day. One youngster was so wet that I caught it and put it in the shelter. This incidentally was the last really wet day of the summer. There were then over nine weeks of hot, dry weather.
Friday 30th June	First egg seen in the nest-box.
Saturday 1st July	Second egg seen at 5.30pm.



Wednesday 5th July	Third egg seen.
Saturday 15th July	One of the earlier youngsters was removed and sent with one of Rode's youngsters to Abbotsbury Swannery, Dorset.
Wednesday 26th July	Egg shell seen on the ledge of the nest-box.
Thursday 27th July	Two chicks seen.
Friday 28th July	Third chick seen.
Tuesday 1st August	The three chicks seem to be growing okay - they are very near the entrance to the nest-box. The food intake appears to be satisfactory. It is the hottest day so far and the parents are not brooding the chicks. My father sprayed the nest-box. Wasps are a particular pest, as they appear to be eating the cut-up day-old chicks.
Wednesday 2nd August	All appears to be going well. The young bird from the first brood was seen carrying food into the nest-box.
Thursday 3rd August	The three chicks appear to be growing satisfactorily.
Tuesday 8th August	I saw all three chicks.
Friday 18th August	All appears to be going well. It has been a very hot week.
Wednesday 23rd August	The first wet day for over nine weeks.
Thursday 31st August	The first youngster is out of the nest.
Friday 1st September	The second youngster is out of the nest.
Sunday 3rd September	The third youngster is out of the nest.
Sunday 8th October	The birds are sold.

Summing up, I have had great pleasure from my Kookaburras. The fact that the female of the pair was hand-reared has not presented any problems over imprinting. To have bred eight youngsters has been the icing on the cake for me. Their food may not be to everyone's taste, but they are certainly interesting birds, perhaps more so in the case of my pair because the female is reasonably tame.

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## BIRDWATCHING IN BRAZIL

by Roger Wilkinson

Brazil is the largest country in South America but it does not have the greatest number of bird species. This honour is held by Colombia which has the advantage of including the extra habitats of the Andes within its boundaries. However, Brazil does have the dubious distinction of a longer list of threatened species. This, in part, is the result of deforestation on the eastern Atlantic seaboard, where remnant forests now hold so many of the country's threatened species.

Among the birds of Brazil are many presently or previously held at Chester Zoo, so it was with particular anticipation that I arrived at Rio de Janeiro with four other birdwatchers in July 1992. We headed for Brazil's only mountainous region which is situated some 150km north-west of Rio and is now protected as the Parque Nacional do Itatiaia. There we spent four days birding the tracks from the lower forests, through cloud forest and above the tree-line into the thin air of the paramo. The forested areas were the hardest to bird, and while the tracks gave good opportunities to see the larger and more conspicuous species the smaller grovellers needed to be encouraged to show themselves by playing tape-recordings of their calls.

That was how such elusive birds as Large-headed Flatbills *Ramphotrigon ruficauda* were persuaded to come out into the open in response to the apparent intruder calling in their territory. Other species were first located by ear and then searched for. Swallow-tailed Manakins *Chiroxiphia caudata* only gave away their presence by their distinctive calls. These gorgeous birds were surprisingly difficult to see in the shadows of the thick bush vegetation.

More conspicuous were the many species of tanagers. These included Diademed *Stephanophorus diadematus*, Black-goggled *Trichothraupis melanops*, Golden-chevroned *Thraupis ornata*, Green-headed *Tangara seledon*, Burnished Buff *T. cayana*, Brassy-breasted *T. desmaresti* and Gilt-edged *T. cyanoventris*. Several Red-breasted Toucans *Ramphastos dicolorus* and a pair of Saffron Toucanets *Bailloniuss bailloni* (both species considered 'near-threatened') were among the many avian highlights.

Birds restricted to this small montane area of Brazil include the Itatiaia Spinetail *Schizoeaca moreirae*, a small brown bird found only in the short moorland-like habitat above the tree-line. Birds of the cloud forests included the handsome and local Black and Gold Cotinga *Tijuca atra*. The cotingas are a beautiful and fascinating family which includes cocks of the rock, bellbirds and umbrellabirds - some of the most spectacular species in the

world. David Snow's excellent book, *The Cotingas*, is not only a classic and a joy to read but includes some stunning plates. One bird illustrated in the work is the tiny, Goldcrest-like, Kinglet *Calyptura calyptura cristata*, which is known only from a few museum specimens collected in the vicinity of Rio de Janeiro and the nearby Serra dos Orgaos. The Kinglet *Calyptura* has not been seen this century and is almost certainly extinct.

Leaving such an excellent area as Itatiaia was difficult - but made easier by the knowledge that our next birdwatching was to be in that tremendous wetland, the Pantanal which borders on Bolivia and is a five-hour flight from Rio de Janeiro.

The Pantanal was outstanding. Within a few hours of arriving we saw a group of four Greater Rheas *Rhea americana*, then a pair of Red-legged Seriamas *Cariama cristata*, before we stopped for the first of many Jabiru *Jabiru mycteria*. A pair of these huge storks stood, unperturbed by our camera clicking, beside a tiny roadside pool. The wealth of birds was astonishing with 'Chester Zoo Specials' including a trio of Bare-faced Curassows *Crax fasciolata* and two Sun-Bitterns *Eurypyga helias*. The night was spent at Hotel Poussada Pixaim, where our room mates included mole crickets and two frogs. Next day we set off down the 240km dirt track known as the Transpantanal Highway. More than 50 Jabiru, 11 Maguari Storks *Ciconia maguari* and numerous Wood Storks *Mycteria americana*, plus spoonbills and many kinds of ibis and herons were seen, as was an astonishing total of 34 Southern Screamers *Chauna torquata*.

The Pantanal is seasonally flooded and our visit was made in the dry season when waterbirds were concentrated in the remaining wet areas alongside the elevated highway. Familiar birds included Blue-fronted Amazons *Amazona aestiva* and Toco Toucans *R. toco*. More unusual birds included the amazing Red-billed Scythebill *Campylorhamphus trochilirostris* - a rather drab, brown bird with a very long, curving red bill - and the shy Sungrebe *Heliornis fulica*. Five Chestnut-bellied Guans *Penelope ochrogaster* (now included in the Birdlife International checklist of threatened birds) appeared briefly, as did the more numerous Common Piping Guans *Aburria pipile* and Chaco Chachlacas *Ortalis canicollis*.

Halfway along the Transpantanal Highway we arrived at a small kiosk set in a grove of palm trees. An old lady hobbled across from a derelict cottage to open the 'shop' and we were offered either a warm beer or cold coke. This was the area where we had been told the Hyacinth Macaw *Anodorhynchus hyacinthinus* had occasionally been seen. The Hyacinth Macaw was really the one bird I had to see whilst in Brazil. I searched the ground beneath the palm trees and found palm nuts that had been opened by a clean bite across their top. Surely this was the work of Hyacinth Macaws...but the nuts looked old rather than fresh and the trail appeared cold.



My companions were more concerned with getting to grips with the challenges posed by the grovellers and skulkers, and thus we entered the swamps, drawn on by the ventriloquial calls of an elusive Undulated Tinamou *Crypturellus undulatus*. On returning to the drinks kiosk the old lady told us she had heard Hyacinth Macaws calling while we were away conducting our fruitless search for the tinamou. That was more than I could take and I set off walking along the road, cutting into an area of tall trees where I suspected the Hyacinth Macaws might be hiding. Excited calls preceded the birds flying-off across the road in full view, much to the delight of my companions.

From within the trees, I could see only trees. My disappointment was not to last, for within a short time I had excellent views of two pairs of Hyacinth Macaws - and a pocketful of the palm nuts they had been eating. These were later identified by John Dransfield of the Royal Botanic Gardens, Kew, as fruits of the palm *Attalea maripa*. These fruits are incredibly hard but the macaws are adept at biting them open to secure the small fatty seeds inside.

I then relaxed, enjoying the rest of the day's birds which included Yellow-naped Macaws *Ara auricollis*. Hundreds of caiman were seen in pools beside the road and these were most concentrated in the deeper water crossed by bridges. The last of the many rickety bridges over water channels along the Transpantanal Highway was in total collapse. We had no choice but to pay the extortionate price of 150,000 cruzeiros (nearly £20 or US\$30) to have ourselves and our vehicle rafted to the other side. It was a case of either that or returning in the dark over 200km back along the dirt road. There was only one hotel at Porto Jofre at this far end of the road and that monopoly allowed them to charge a million cruzeiros for two rooms shared between seven of us. Our room was also occupied by leeches, several frogs and a scorpion.

The next day was also outstanding with early morning views of an Undulated Tinamou glimpsed between clumps of dense undergrowth. Four Bare-faced Curassows, five each of Sungrebes and Toco Toucans, and a total of 13 Hyacinth Macaws were seen as well as concentrations of waterside birds including 25 Maguari Storks, dozens of Jabiru and hundreds of Snail Kites *Rostrhamus sociabilis*. Other common raptors included Roadside *Buteo magnirostris*, Savannah *Buteogallus meridionalis* and Black-collared Hawks *Busarellus nigricollis*. Two more days in the Pantanal added further sightings of many of these birds, including more Hyacinth Macaws. New birds included Great Horned Owls *Bubo virginianus* and White Woodpeckers *Melanerpes candidus*.

On the return journey we again stayed at the Hotel Poussada Pixaim and allowed ourselves a little time to photograph the rather tame Yellow-billed Cardinals *Paroaria capitata* and Silver-beaked Tanagers

*Ramphocelus carbo* feeding on discarded food. A pair of Jabiru Storks nesting close to the hotel were unusual in that the female had a completely red head, totally lacking the black coloration shown by all of the hundreds of other Jabiru we had seen.

After a late night celebrating our birding successes on the Pantanal we forced ourselves out of our beds before 4am in order to get a good start for the journey to Chapada. The open back of the jeep was wet and cold as we drove through the rain up country to Chapada. It was still raining when we arrived to find hundreds of cars full of sleeping occupants after the previous night's annual carnival. Others still walked around the streets with bottles, some still singing wrapped in blankets.

We found a hotel out of town and breakfasted before beginning to search for birds. Soon we had forgotten the rain as through the mist we began to find some excellent birds including flocks of Blue-headed Parrots *Pionus menstruus*, Peach-fronted *Aratinga aurea* and White-eyed Conures *A. leucophthalmus*, a Blue-crowned Motmot *Momotus momota* and the exquisite Dot-eared Coquette *Lophornis gouldii*, a tiny hummingbird with remarkable facial frills. Birds were watched catching the insects disturbed by an army ant trail and these included a female White-backed Fire-eye *Pyrglena leuconota*, Large-billed Antwren *Herpsilochmus longirostris* and both Saffron-billed *Arremon flavirostris* and Pectoral Sparrows *A. taciturnus*. Aviculturists would perhaps have been more taken by the brightly-coloured Swallow Tanagers *Tersina viridis* and Purple-throated Euphonias *Euphonia chlorotica*, but like ourselves might have had difficulty deciding whether the toucans we saw were Yellow-ridged *R. vitellinus culminatus* or Cuvier's *R. tucanus*. Both look identical but the former croaks while the latter yelps. These just remained silent!

That night we returned to Cuiaba, then the next day flew over burning forest to Alto Floresta. There, on the southern edge of the Amazon, we enjoyed our first views of Chestnut-fronted Macaws *A. severa* and saw our only Hawk-headed Parrots *Deroptyus accipitrinus fuscifrons* of the trip. These, unlike the Hawk-heads at Chester Zoo, were of the Brazilian race, distinguished by their browner foreheads. Because of the ban on the export of Brazilian birds, these are rarer in aviculture than the nominate form. Also here were other really exciting rainforest birds including Spangled Cotingas *Cotinga cayana*, Bare-necked Fruitcrows *Gymnoderus foetidus* and Paradise Tanagers *T. chilensis*.

The next day involved some relatively easy birding as we walked a number of trails cut in the forest behind our hotel. A flock of 10 Crimson-bellied Conures *Pyrrhura rhodogaster* were seen. This is a bird previously kept at Chester Zoo, the breeding of which in 1976 was a UK first. Our birds were later sent to Rotterdam Zoo to join their breeding group. Although an extreme avicultural rarity, the Crimson-bellied Conure is presently

considered to be safe in the wild. It was, nonetheless, extremely gratifying to see such a beautiful bird in its native range. Other brightly-coloured birds included Turquoise Tanagers *T. mexicana* and their yelping calls betrayed the identity of a group of Cuvier's Toucans. The real highlights were two White-browed Hawks *Leucopternis kuhli* (a very uncommon bird confined to Brazil and Peru and listed by ICBP as near-threatened), and excellent views of an Amazonian Pygmy Owl *Glaucidium hardyi*. The latter species was described only recently and our individual responded to the playback of its distinctive calls by flying to investigate the 'newcomer' in its territory.

The next stage of our journey involved taking a small boat along the Teles Pires River (a tributary of the Amazon) and then up along its smaller source - the River Cristalino. That journey was excellent and we were rewarded with good views of Swallow-winged Puffbirds *Chelidoptera tenebrosa*, Swallow-tailed Kites *Elanoides forficatus* and White-banded Swallows *Atticora fasciata*.

The 'jungle lodge' at the end of this boat trip was our base for the next four days. Trails in this area were thick and seeing birds was very difficult. Nonetheless, some really good birds were found including such 'zoo' birds as Blue and Yellow *A. ararauna* and Scarlet Macaws *A. macao*, Amazonian Umbrellabirds *Cephalopterus ornatus* and Dark-winged Trumpeters *Psophia viridis*. Blue and Yellow Macaws were watched prospecting for nest sites in dead palm trunks and a pair of Blue-headed Parrots roosted in a tree hole close to our night quarters. A series of wooden slats were nailed, ladder-like, up this tree to the height of the roost hole. Presumably this was a regular nest site from which chicks were regularly 'harvested'. Brazil does not permit export of its birds so I suspect the chicks would have been sold locally.

Other parrots seen in these forests included Orange-winged Amazons *A. amazonica*, White-bellied Caiques *Pionites leucogaster* and Painted Conures *P. picta*. Mammals seen included three tapirs swimming down river and a group of Black Spider Monkeys. The exhilarating experience of being woken at 4am by the surrounding wall of sound created by chorusing Howler Monkeys was incredible. So intensely deep and loud was this dawn-chorus that it could be felt as well as heard. Working the trails and striking into the forest off the trails produced a large number of 'difficult' birds including many species of antwrens and such celebrated obscurities as Snethlage's *Snethlagea minor* and Zimmer's *Idioptilon aenigma* Tody Tyrants.

Arriving at the tiny airstrip for our return flight to Cuiaba, we found our small aircraft surrounded by armed guards. With sirens blaring a Brink's van raced across the runway and very heavy crates (gold was panned locally)



were loaded into the plane. A gun-toting guard accompanied us on the flight to Cuiabá. This was the most awful flight I have ever experienced. The whole journey was spent travelling through smoke-filled air from burning rainforest. The scale of deforestation and land degradation was greater than I had expected. Brazil was then burning and destroying 8.5 million acres of rainforest each year.

Species presently considered 'safe', including Crimson-bellied Conures, really are only as safe as the forest areas they inhabit. The forests are vast beyond belief, but so it would appear is man's greed. Zoos like Chester now have to concentrate their captive breeding programmes on those species immediately endangered, but must educate their visitors to the fundamental problems of habitat destruction.

The following day we revisited the area south of Chapada and scored where we had previously failed in seeing Red and Green *A. chloroptera* and Blue-winged Macaws *A. maracana*, and Burrowing Owls *Speotyto cunicularia*. The scenery in the area around Chapada dos Guimarães was outstanding with high inland cliffs and waterfalls and the sight of Red and Green Macaws winging their way across a forested canyon can only be described as magnificent.

Another flight that evening (our itinerary was extremely tight!) took us to the ultra-modern capital of Brasília whose city plan is in the shape of an aeroplane. We had only one morning available to explore Brasília National Park. An excellent couple of hours in this cerrado habitat were spent watching Yellow-faced Amazons *A. xanthops* and finding a pair of the increasingly scarce Cock-tailed Tyrants *Alectrurus tricolor* (a small flycatcher in which the male has a tail shaped like a cockerel's).

A late afternoon flight took us to Vitória on Brazil's Atlantic coast. The Atlantic rainforests now exist only as remnant patches having been reduced to 4% of their original area and hold some of the world's most endangered birds. Two areas of particular importance are the privately owned Linhares Forest Reserve and the nearby Sooretama Forest Reserve.

The CVRD Linhares Reserve is owned by the Companhia Vale do Rio Doce (CVRD) and was set up 40 years ago to supply timber for railway sleepers. The enlightened attitude of this major company in preserving this area, promoting field research and setting up on-site captive breeding facilities can only be commended.

A visit to the CVRD breeding facilities showed the success of their captive breeding programme for the Solitary Tinamou *Tinamus solitarius*. Unfortunately their captive pair of the highly endangered Red-billed Curassow *C. blumenbachii* had not been successful. Only 200 of these birds are believed to remain and it was certainly one of the species we most wanted to see at Linhares.

Our first morning's survey was rewarded with the sight of one male and two female Red-billed Curassows as they walked up and across a forest trail at the far end of the reserve. This was followed by a brief encounter with one of the world's rarest primates, the Woolly Spider Monkey. The area proved very productive and after several days our species inventory for this reserve included Rusty-margined Guans *P. superciliaris*, Reichenow's Blue-headed Parrot *P. m. reichenowi*, Red-browed Amazons *A. rhodocorytha*, White-eared Conures *P. leucotis* and my target bird, the Blue-throated Conure *P. cruentata*. A pair of the latter species has been kept at Chester for several years but although eggs have been laid (and in 1991 and 1995 chicks were hatched), success still eludes us for this important species.

Other memorable birds seen at CVRD Linhares included Bare-throated Bellbirds *Procnias nudicollis*, White-crowned Manakin *Pipra pipra* and a tiny hummingbird, the Minute Hermit *Phaethornis idaliae*. Perhaps most unexpected of all was a beautifully marked Yellow-footed Tortoise deep inside the forest.

Another welcome surprise was a Red-rumped Agouti which quickly ran across one of the forest tracks. The closest we came to seeing the regal Harpy Eagle *Harpia harpyja* was to poke a stick at the carcass of a Maned Three-toed Sloth which it had killed the previous day. A Brazilian ornithology student researching the feeding habits of the parrots at Linhares had watched the Harpy Eagle attacking this unfortunate sloth and clearly enjoyed recounting how close the eagle had been to him. The awful feeling an avid birdwatcher gets on being told in detail about birds he has missed is difficult to describe - we certainly had been 'gripped' on this one!

The visit to Sooretama Forest Reserve was all too brief. Having spent longer than we expected at Linhares, we only had one morning at Sooretama but succeeded in getting many telescope views of at least two male White-winged Cotingas *Xipholena atropurpurea*. These, like so many other Atlantic forest birds, are highly endangered through the destruction and fragmentation of these forests. An unexpected bonus was a Rufous-capped Ant-Thrush *Formicarius colma* which performed for us by giving stunning views in the open before again disappearing into thick forest vegetation.

Leaving Sooretama, we drove to Santa Teresa where we hoped to be able to see a good selection of rarer hummingbirds. Our destination was the former home of the late Professor Augusto Ruschi, a world expert on hummingbirds who is now commemorated on one of Brazil's banknotes. We were delighted to be allowed onto the veranda of his widow's house to watch and photograph the wild hummingbirds attracted to the nectar feeders.

A total of 15 species were seen including the magnificent Black Jacobin *Melanotrochilus fuscus*, Brazilian Ruby *Clytolaema rubricauda* Violet-capped Woodnymph *Thalurania glaucopis*, Glittering-throated Emerald *Amazilia fimbriata*, and an exquisite Frilled Coquette *L. magnifica*. Similar to the Dot-eared Coquettes we had seen earlier at Chapada, this tiny hummingbird was elaborately coloured and sported fancy facial frills.

Darkness forced us to leave and we headed back to Vitoria. The next day, my last in Brazil, we caught a flight to Rio de Janeiro. A couple of hours to spare in Rio were occupied by taking a taxi to Tijuca National Park. There, below the statue of Christ, we had excellent views of the normally secretive White-eyed Foliage-gleaner *Automolus leucophthalmus* and saw Red-necked Tanagers *T. cyanocephala*. On leaving Rio I relaxed on the plane by counting up my tally of over 470 bird species seen in a hectic three weeks. The finer identification points of many of those birds I have already forgotten, but the Brazilian experience will remain forever. I wish I could guarantee the same for the future of Brazil's many rare and threatened birds.

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## SUCCESS WITH THE GREY-HEADED OLIVE-BACK IN SOUTH AFRICA

by Neville Brickell and Chris Koen

I (C.K.) decided to study the Grey-headed Olive-back *Nesocharis capistrata* because of the inadequate investigations in the field by Bates (1930), Chapin (1954), and Serle (1940), the sparse information about it in a more recent report from Zaire by my colleague and co-author (Brickell, 1960), and the correspondingly vague information about this species in captivity.

The olive-backs - there are three species - are characterised by their rounded wings, medium length tail and sharp-pointed bill, with a slight hook on the tip of the upper mandible. They are possibly most closely related to the crimson-wings *Cryptospiza* spp.



Neville Brickell

Adult Grey-headed Olive-back *Nesocharis capistrata*

Neville Brickell's photo gives a good idea of the Grey-headed Olive-back's appearance. Descriptions of it have been given by a number of authors and further comment here is therefore unnecessary, except to note that in worn plumage the green feathers may very well appear to be darker and the wing tips yellower, giving a somewhat streaky effect. Alternative names for this species include White-cheeked Olive-back and White-cheeked Waxbill.

It is found in coastal West Africa from Gambia and Benin, through central Nigeria and Cameroon to north-eastern Zaire, extreme south-western Sudan and south-western Uganda. There it frequents savanna bush, riparian woodland near swamps, forest edges and clearings. N.B. found that no more than five birds formed a family group. They foraged among the leaves of plants in a rather warbler-like way, feeding on seeds and include in their diet, those of wild figs and grasses. Small insects, notably ants and caterpillars, and also small snails have been recorded as forming part of their diet. In three separate observations, N.B. never saw them feeding on the ground, although they are said to do so.

The nest described by Chapin appears to be the only one found to date. Three metres (9ft 7in) above the ground in a thick bush, it was constructed of grass stems and dry weeds and measured 18cm (7in) from top to bottom, with the entrance hole rather high up. The fact that it was unlined, suggests it was unfinished.

Prior to 1995, Grey-headed Olive-backs were available occasionally to local aviculturists here in South Africa, but unfortunately were very expensive and needed to be acclimatised carefully after being released from the quarantine station. Recently I (C.K.) managed to obtain four from a local dealer and decided to house them together in a small aviary with single pairs of Purple Grenadiers *Uraeginthus ianthinogaster*, Cordon-bleus *U. angolensis*, Red-faced Crimson-wings *Cryptospiza reichenovii* and Green Twinspots *Mandingoa nitidula*. They were housed together until the end of the non-breeding season, which is from June until October in South Africa. Close observations on the Grey-headed Olive-backs during this period revealed that I had three males and only one female.

The aviary measures 3.3m x 1.5m x 1.8m high (11ft x 5ft x 6ft high). One side only is covered with mesh. The sleeping quarters are covered with corrugated asbestos to reduce heat during the summer and the flight is covered with clear corrugated perspex to allow the light to penetrate. The only living plant life is an indigenous terrestrial fern which is restricted to the flight area. Beneath the sleeping shelter is Khaki Weed *Tagetes minuta*, which originates from South America. It produces an unpleasant odour and is dried and then packed tightly together beneath the roof. Its vernacular name is derived from the 'kakies', the British soldiers who introduced the seeds which contaminated the hay imported for their horses during the Boer War.

In December one male became extremely active, carrying grass and displaying to the only female. It was not long afterwards that a nest was being constructed of fern fronds, which had earlier been offered to the other aviary occupants, and was lined with teff grass. The entrance was situated at one side with a funnel attached. With the assistance of a torch,



I was later able to observe that three white eggs had been laid on alternative days. It was at this stage of incubation that the breeding male became aggressive towards the other two males, but not wishing to disturb the pair unduly by removing the spare males immediately, I hoped they might tolerate his aggressive behaviour for a little longer. Unfortunately, the decision was disastrous, as both spare males died within a few days from severe pecking on their foreheads.

Both pairs shared the incubation and the feeding of the nestlings. I provided mixed millets, with additional Japanese millet and manna, plain canary, rape, niger, paddy rice (soaked overnight), seeding grasses (*Eragrostis* and *Panicum* spp.), germinating Japanese millet, locally manufactured Avi-plus Canary rearing food, to which was added finely grated apple, and there was a constant supply of mound termites. They were also provided with finely grated cuttlefish bone, shell grit, beach sand and charcoal.

Three young left the nest. They differed from their parents in having the entire head including the nape a darker shade of grey and the back and wings more greyish and less olive. The breast and belly were a darker grey, and the flanks reddish olive. The bill was whitish with a greenish tip.

The pair went to nest a second time. This time only two of the three eggs hatched. The incubation period was 15 days, calculated to the day the second egg hatched. The nestling period was 23 days, calculated to the day the second chick left the nest. The third egg, which was added, measured 16mm x 12mm.

At the South African National Cage Bird Association Conference in late July, Chris Koen was awarded the Gold Medal for the 'Breeding of the Year'.

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## THE BLUE-THROATED MACAW EEP SCHEME

by Roger G. Sweeney

The Blue-throated Macaw *Ara glaucogularis* was practically unknown both in the wild and in captivity until as recently as the early 1980s, when a small number began to appear in captivity. The first breeding was recorded in 1984. Subsequently an increased number of wild-caught birds entered North American and European aviculture, until the trade was curtailed when the species was placed on Appendix 1 of the CITES convention.

Captive breeding has continued to increase, particularly in North America where it is now well established. The European population which formerly comprised of a handful of wild-caught birds imported in the early 1980s, has grown as a result of captive breeding and from captive-bred birds imported from North America.

Until very recently the wild population had not been studied and little was known about it, except that it was centred upon the Department of Beni in central Bolivia, where very little exact data had been collected regarding its status there. It had always been thought that the wild population was small due to natural constraints, such as the availability of suitable habitat, with an estimate of 2,000 birds being circulated. The trapping of wild birds undoubtedly reduced this figure, but to what extent was uncertain. Even its exact range remained undefined.

It was not until 1993 that a team of Bolivian biologists funded by the Wildlife Conservation Society and represented by Charles Munn documented the approximate range of the Blue-throated Macaw in the wild. Since then the same team of biologists from the Bolivian 'Armonia' organisation has continued to study this species and in 1995, funded principally on this occasion by the Loro Parque Foundation, carried out an extensive survey to establish the true status of this species. The results were shocking. After extensive field surveys it was estimated that the remaining wild population of Blue-throated Macaws probably numbers less than 100, restricted to the Beni region of Bolivia. Always considered to be extremely rare, the Blue-throated Macaw must now be recognised as perhaps the most threatened of the large macaws.

A proposal to form an EEP (European Species Survival) scheme for the Blue-throated Macaw was officially submitted by Loro Parque in early 1994 and approved later the same year. Loro Parque achieved the first captive breeding of this species back in 1984 and has been breeding it ever since, and has built up a sizeable number of birds which belong now to the Loro Parque Foundation. Elsewhere in Europe, five other zoological collections also keep the Blue-throated Macaw, but only one of these has so far been successful in breeding this species. A substantial number of Blue-throated Macaws are maintained by private keepers and some have been successful

in breeding this macaw. However, encouraging such private keepers to participate fully in the EEP has proved difficult and the history of many individual birds is difficult to establish because of poor record keeping and because many individual birds have entered Europe from North American aviculture.

At present no regional programme exists for the Blue-throated Macaw in the USA or any other geographical region, other than the European EEP. It has therefore been proposed that the existing European regional studbook should be extended into an international studbook for the Blue-throated Macaw.

The first edition of the European regional studbook, up until the year ending December 1995, was produced in June 1996. It has become clear that a number of private keepers of this species would be willing to participate in a European studbook, but would not be willing to sign their birds over to a full EEP scheme commitment. Therefore the studbook includes data on all known birds, but concentrates data analysis only on birds which are part of the EEP population, whose histories have been recorded more fully and are committed by their owners to remain within the boundaries of the programme. The first section, therefore, is presented as an historical studbook, listing all known birds that could be traced, whether they were part of the EEP or not. It lists 74, but it is hoped that this figure can be amended upwards in future editions, if more data is forthcoming from private keepers. The second section concentrates on the EEP population and is a current report on existing EEP birds. It documents 37 Blue-throated Macaws which are committed to the EEP population, all of them held in zoological gardens. A demographic and genetic analysis of these birds follows. The conclusions reached in this first studbook are that for many European birds which were hatched in North America, an accurate history of their parentage still needs to be ascertained. Also many more of the population's founder birds need to become reproductively active. The studbook ends with a report from Alan Hesse, the project coordinator for 'Armonia', who is leading the field survey on the Blue-throated Macaw.

Two years after approval for the EEP was granted, the following points have become clear. Progress has been slow in trying to encourage private keepers to participate in the programme and in trying to gain accurate data about the history of many birds bred outside Europe. The Blue-throated Macaw has the potentiality to breed successfully, but the limited success achieved in Europe so far, indicates that it has to be managed more carefully if the population is to be viable in the long-term.

Clearly, far more birds of a greater diversity of bloodlines need to become reproductively successful, if the population is to grow in a balanced fashion. Most of all, it has been realised for some years that the establishment of a self-sustaining captive population is advantageous for conservation reasons, but it is only with the most recent disturbing report from Bolivia that the

true crisis facing the survival of this species in the wild has been fully realised, making the need for captive management to be more effectively implemented very clear to see.

*Roger G. Sweeney is Curator of Birds at Loro Parque S.A., 38400 Puerto de la Cruz, Tenerife, Spain, and can be contacted there regarding the Blue-throated Macaw EEP scheme.*

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## LAST CHANCE TO DECLARE SPIX'S MACAWS

It is the last chance for any remaining holders of captive Spix's Macaws *Cyanopsitta spixii* to declare them to the Brazilian Government for inclusion in the globally managed population. The wild population of Spix's Macaw, the world's rarest bird, was reduced to a single male by a combination of pressures including habitat loss and removal of birds from the wild for the captive trade. Taking the most pragmatic route forward in the best interest of this species' conservation, in 1990, the Brazilian Government formed the Permanent Committee for the Recovery of the Spix's Macaw (CPRAA), and issued a Decree which invited all holders of this species to enter their birds into a globally managed population.

Holders in Brazil, the Philippines, Spain and Switzerland have declared their *C. spixii* and have complied with the management recommendations of the committee, in particular to pair individuals to promote breeding and retain genetic diversity, and to release an adult female in March 1995, to pair with the wild male.

During the past five and a half years, an intensive programme of protection, habitat restoration, environmental education and community involvement has been in operation in north-eastern Brazil, where the wild male and released female live. This programme has been financed principally by the Loro Parque Foundation (a member of the committee), overseen by the Brazilian Institute of Environmental and Natural Renewable Resources (IBAMA) of the Ministry of Environment.

Although the globally managed captive population is breeding and increasing, it remains small and would benefit from the addition of more founder individuals. Therefore, the Brazilian Government has issued a further Decree which permits any holders of hitherto undeclared captive Spix's Macaws to enter them into the managed population. This must be done by 30th October 1996. After this date, the Brazilian Government will no longer permit the voluntary declaration of any captive Spix's Macaws which have remained outside the globally managed population, and will work with the relevant authorities to confiscate any undeclared birds as and when the opportunity arises.

**Loro Parque Foundation**

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# FIRST BREEDING RECORDS FOR CORACIIFORMES AND PICIFORMES REARED IN THE UK

by Dave Coles

There has been an increase in recent years of the number of species of Coraciiformes and Piciformes being kept in both private and public collections in the UK. As I am occasionally asked if a particular species has been reared, I thought it might be a good idea to publish a list of species for which I have first breeding records.

## KINGFISHERS *ALCEDINIDAE*

WOODLAND KINGFISHER *Halcyon senegalensis* - 1971 Winged World  
A.M. 1971:193

KOOKABURRA *Dacelo novaeguineae* - 1905 London Zoo Repts.1905:35  
**MOTMOTS *MOMOTIDAE***

BLUE-CROWNED MOTMOT *Motmotus momota* - 1970 Winged World  
A.M. 1970:188

## BEE-EATERS *MEROPIDAE*

WHITE-FRONTED BEE-EATER *Merops bullockoides* - 1975 Winged World  
A.S.B.R. 1975:26

LITTLE BEE-EATER *Merops pusillus* - 1970 Winged World  
A.M. 1970:139

## ROLLERS *CORACIIDAE*

EUROPEAN ROLLER *Coracias garrulus* - 1901 W.H. St. Quintin  
A.M. 1901:217

LILAC-BREASTED ROLLER *Coracias caudata* - 1929 H. Whitley  
A.M. 1931:244

INDIAN ROLLER *Coracias benghalensis* - 1984 Blackpool Zoo  
T. Baxter, per. comm.

RACKET-TAILED ROLLER *Coracias spatulata* - 1991 R. Cattermole  
A.M. 1992:22

## HOOPOES *UPUPIDAE*

HOOPOE *Upupa epops* - 1911 M. Aronstein B.N. 1911:221

## WOOD HOOPOES *PHOENICULIDAE*

GREEN WOOD HOOPOE *Phoeniculus purpureus* - 1968 Winged World  
A.M. 1968:184

## HORNBILLS *BUCEROTIDAE*

RED-BILLED HORNBILL *Tockus erythrorhynchus* - 1967 Winged World  
A.M. 1968:144

VON DER DECKEN'S HORNBILL *Tockus deckeni* - 1990 Leeds Castle  
A.M. 1992:44

**HORNBILLS BUCEROTIDAE** cont'd

GREY HORNBILL *Tockus nasutus* - 1988 Chester Zoo A.M. 1990:72

YELLOW-BILLED HORNBILL *Tockus flavirostris* - 1983 B. Marshall/J. Ridgeway  
A.M. 1984:36

JACKSON'S HORNBILL *Tockus jacksoni* - 1974 London Zoo A.M. 1975:49

TARICTIC HORNBILL *Penelopides panini* - 1977 London Zoo I.Z.Y. 19:339

CASQUED HORNBILL *Bycanistes subcylindricus* - 1972 Birdworld  
A.M. 1973:23

TRUMPETER HORNBILL *Bycanistes bucinator* - 1989 Chester Zoo  
C.B. 26/8/1989:1

GIANT HORNBILL *Buceros bicornis* - 1983 Cotswold Wildlife Park  
C.B. 21/4/1984:7

WRINKLED HORNBILL *Aceros corrugatus* - 1995 Chester Zoo  
R. Wilkinson, per. comm.

MALABAR PIED HORNBILL *Anthracoceros coronatus convexus* - 1995  
Chessington Zoo D. Vrettos, per. comm.

ABYSSINIAN GROUND HORNBILL *Bucorvus abyssinicus* - 1989 Birdworld  
national media

**BARBETS CAPITONIDAE**

BLACK-SPOTTED BARBET *Capito niger* - 1971 Winged World  
A.M. 1971:194

RED-HEADED BARBET *Eubucco bourcierii* - 1974 M.D. England  
A.M. 1975:121

TOUCAN BARBET *Semnornis ramphastinus* - 1972 Winged World  
A.M. 1972:197

FIRE-TUFTED BARBET *Psilopogon pyrolophus* - 1984 Chester Zoo  
A.M. 1984:193

SPOTTED-FLANKED BARBET *Tricholaema lacrymosum* - 1976 M.D. England  
A.M. 1977:1

PIED BARBET *Tricholaema leucomelan* - 1983 B. Peck A.M. 1983:148

RED-FRONTED BARBET *Tricholaema diadematum* - 1972 M.D. England  
A.M. 1973:9

BROWN-THROATED BARBET *Tricholaema melanocephalum* - 1970  
Winged World A.M. 1970:145

BLACK-COLLARED BARBET *Lybius torquatus* - 1983 Harewood Bird Gardens  
Z.F.N. Summer 1983

DOUBLE-TOOTHED BARBET *Lybius bidentatus* - 1975 M.D. England  
A.M. 1976:191

LEVAILLANT'S BARBET *Trachyphonus vaillantii* - 1979 H. Bishop  
C.B. 1/3/1980:3

RED AND YELLOW BARBET *Trachyphonus erythrocephalus* - 1973  
M.D. England A.M. 1973:194

**BARBETS CAPITONIDAE** cont'd

D'ARNAUD'S BARBET *Trachyphonus darnaudii* - 1971 Winged World  
A.M. 1972:52

YELLOW-BREASTED BARBET *Trachyphonus margaritatus* - 1927 J.S. Reeve  
A.M. 1927:226

YELLOW-FRONTED TINKERBIRD *Pogoniulus chrysoconus* - 1995  
M. & N. Curzon A.M. 1996:36

**TOUCANS RAMPHASTIDAE**

CRIMSON-RUMPED TOUCANET *Aulacorhynchus haematopygus* - 1982  
Padstow Bird Gardens A.M. 1982:193

EMERALD TOUCANET *Aulacorhynchus prasinus* - 1988 N. Dorman  
C.B. 17/12/1988:7

TOCO TOUCAN *Ramphastos toco* - 1987 Ocean World/Linton Zoo  
C.B. 22/8/1987:2

CHANNEL-BILLED TOUCAN *Ramphastos vitellinus* - 1989 Chester Zoo  
A.M. 1991:179

**WOODPECKERS PICIDAE**

WHITE-HEADED WOODPECKER *Leuconerpes candidus* - 1937  
C.H. Macklin A.M. 1937:244

YELLOW-FRONTED WOODPECKER *Melanerpes flavifrons* - 1961 J.E. Collins  
A.M. 1981:182

BLACK-CHEEKED WOODPECKER *Melanerpes pucherani* - 1992 R. Sawyer  
C.B. 5/12/1992:9

LESSER SPOTTED WOODPECKER *Picoides minor* - 1977 L.J. Prior  
A.M. 1977:125

FULVOUS-BREASTED WOODPECKER *Picoides macei* - 1995 Birdworld  
A.M. 1996:18

**Reference abbreviations**

A.M.	Avicultural Magazine
A.S.B.R.	Avicultural Society Breeding Register
B.N.	Bird Notes
C.B.	Cage and Aviary Birds
I.Z.Y.	International Zoo Yearbook
Repts.	London Zoo Annual Reports
Z.F.N.	Zoo Federation News

*Dave Coles is Curator of the bird collection at Beale Park, The Child-Beale Trust, Lower Basildon, Berks, RG8 9NH, England.*



## LONDON ZOO NOTES

by Simon Tonge

Three species have successfully reproduced for the first time at London Zoo in 1996. A White Woodpecker fledged in July, 2 Bali Mynahs have been reared from two pairs received from Jersey Wildlife Trust last year, and a Black-faced Ibis chick hatched in an incubator in early July after the adult female died on the nest of egg peritonitis. The second egg in the clutch was infertile.

The zoo's Red-billed Hornbill pair also bred, but the male died shortly before the eggs were due to hatch so the clutch was taken for artificial incubation. One egg hatched and the young bird was reared without problem.

Recent arrivals include 2 Yellow-fronted Tinkerbirds (both bred by M. & N. Curzon at Rode), 1 male Plumbeous Redstart (bred at Chester Zoo), 2 Magpie Robins, 2 Shama Thrushes, 2 Black-necked Aracaris, 1 Sulawesi Mynah, 1 Abdim's Stork, 2 female Hyacinth Macaws (from Birds International in the Philippines) and 3 Silver-throated Tanagers. Most of the Passerines are species that have been recommended for management by the Zoo Federation's Passerine Taxon Advisory Group. We are very keen to obtain more Silver-throated Tanagers, should anyone know of odd birds anywhere.

The zoo's last Tropic Hornbill, a male, has been sent to the West Country Wildlife Park at Cricket St Thomas to pair with one of their two females. A variety of waterfowl, including Eurasian Wigeon, Bahama Pintail and Eurasian Pintail have been donated to Paignton Zoo - and the zoo's last Silver-beaked Tanagers have been sent to Blackpool Zoo.

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## THE PRESIDENT'S GARDEN PARTY 1996

by Stewart Pyper

On Sunday 19th May almost 90 members and their guests travelled from various parts of the country to view the marvellous collection of birds kept by our President, Miss Ruth Ezra, and Vice-President, Raymond Sawyer, at Cobham, Surrey. They must surely have one of the finest private collections. It includes not only birds, but tortoises and other reptiles, and various mammals, plus a wonderful collection of trees and plants, including a selection of succulents.

What gave us all particular pleasure was to see Raymond in fine spirits after his major operation last Autumn. It may not have been appreciated by all those present that it was our 21st annual visit. The first was in 1976. I wonder how many of us have attended all 21?

The weather in May was variable, being generally cooler than usual, and the afternoon mirrored this. During tea there was a tremendous downpour of rain, but there were also some sunny spells. Raymond believed that most plants were up to a month behind in flowering and this combined with an earlier than usual visit meant that it coincided with the rhododendrons being in full colour.

The walk around the garden was not as long as usual due to the fact that a Demoiselle Crane was sitting. However, we saw thickknees, Red-crested Touracos and Island Thrushes in the garden aviary. In the paddock range of four flights we saw Keas, Kookaburras, Satyr Tragopans, lutino Princess of Wales Parrakeets, and a Blue Whistling Thrush. The latter was separated from its mate as they had started fighting. For those of you who do not know them, these birds can be killers. Those who bypassed the 'Jewel Cage' missed seeing various Gouldian Finch mutations (not to everyone's taste), Red-headed Parrot Finches, Painted Finches and a pair of Quail Finches.

The flock of flamingos on the lake had not yet started nesting but various ducks and geese were sitting, 'Emma', Ruth and Raymond's tame female Stanley Crane was roaming free. The lakeside aviary houses Scarlet Ibis, Masked Plovers, Giant Spotted Laughing Thrushes and I counted at least four Azure-winged Magpies.

Most of the collection is housed in a variety of aviaries to the rear of the house. What is known as the 'Waterfall Aviary' contains a magnificent pair of Blue-bellied Rollers, and hopes are high that they will breed. Other birds in the aviary include Royal or Golden-breasted Starlings, Hoopoes, Grandalas, White-capped Redstarts, and Avocets which were nesting. As last summer was so hot, it presented problems for the Grandalas, as they disliked the long, hot, dry days. The adjacent flight contains Green Wood Hoopoes and a female Violaceous Touraco which will attack the female keeper, if she enters the aviary.

Blue-faced Honeyeaters have nested and hand-rearing was being attempted, because in the past eggs had disappeared. The pair of Choughs appear to be two females, as nine eggs have been laid but none have been fertile. A Magpie Tanager which has been at Cobham for sometime shares a flight with Red-winged and Red-tailed Laughing Thrushes, and a pair of lutino Princess of Wales Parrakeets.

The tropical house is always admired, as much for the plants as for the birds, which can sometimes be difficult to see. Among those I saw were a pitta, Long-tailed and Lesser Green Broadbills, Black-chinned Yuhinas, Splendid Sunbirds, and a Golden Bush Chat.

Three Carmine Bee-eaters occupy a flight which has a host of succulents tastefully arranged on the floor. The range of six heated indoor flights contain a flock of Red-headed Tits, Fukien and Greater Niltavas, Roulroul Partridges, a Banded Pitta, Paradise Tanagers which have hatched young, Blue-naped Chlorophonias which have also hatched young, White-throated Bee-eaters, Mrs Gould's and Scarlet-chested Sunbirds, various flycatchers, a Golden-headed Quetzal and a Rhodospingus Finch.

One of three flights which are covered over house a pair of Bartlett's Bleeding-heart Pigeons which have nested and a pair of Black-cheeked Woodpeckers, which may have had young in their nesting log at the time of our visit. The two main aviaries, as I call them, and the adjacent flights contain Splendid, Emerald and Violet-backed Starlings, pygmy geese, Livingstone's Touracos, more Avocets, Black-necked Stilts, various laughing thrushes, Philippine Hanging Parrots which were nesting, Stella's Lories, grosbeaks, Toco Toucans, a Rufous Motmot, and many more birds, including various fruit doves.

A pair of Cardinal Lories reminded me immediately of its near relative the Yellow-streaked Lory.

Following the usual delicious tea, taken inside by most people because the weather was changing, our Hon. Secretary and Treasurer, Geoffrey Greed, thanked our hosts for their kind hospitality. Ruth and Raymond donated all the monies from the ticket sales, amounting to over £630.00, to the Society's funds, for which we are all most grateful. Whilst we were all together our President presented medals for first UK breedings to five members who were present:-

Ms. R. Wiseman Desmarest's Fig Parrot *Psittaculirostris desmarestii*

J. Trollope Cinereous Finch *Piezorhina cinerea*

P. Taplin Siberian Blue Robin *Erithacus cyane*

P. Clear Emerald Lorikeet *Neopsittacus pullicauda*

K. W. Dolton Yellow-naped Amazon *A. ocrecephala auropalliata*

B. C. Sayers was not present to receive his medal for breeding the Boobook Owl *Ninox novaeseelandiae*.

All too soon it was time to say our farewells and to leave. If we could have chosen something to take back with us for our own collections, I would have chosen the Blue-bellied Rollers.



## BOOK REVIEWS

### Elliot's Monograph of the Hornbills

Dutchman Jan Gerard Keulemans (1842-1912) was undoubtedly one of the best bird artists of his era. In 1868 he came to England to illustrate such journals as *Ibis* and the *Proceedings of the Zoological Society*. His beautiful plates which adorned Elliot's *Monograph of the Bucerotidae or family of the Hornbills* must have created much interest when the book was published in 1882. At that time little was known of the natural history of this group of birds. Indeed, the information on some species in this book is exceeded in length by the list of synonyms for that species. Anyone today who needs solid information will refer to Alan Kemp's informative and readable *The Hornbills* (Oxford University Press, 1995).

A facsimile of Elliot's original book has been published in Germany by Fundace f Verlag. Additional pages at the end of the book provide scientific, German and English names in use today, distribution maps and a list of the names used by Elliot alongside recent nomenclature.

After waiting two years for its publication I have to admit to being disappointed. The small page size 8½in (21cm) x 10in (31cm) has resulted in some of the plates being slightly cropped. In a book which costs £170 this is not pleasing. Indeed, I complained to the bookseller and was told that I could return the book. I then realised that I could not bear to be parted from Keulemans' exquisite plates so I placed the book on a stand and open it at a different plate daily. I feast my eyes on the Red-billed Hornbill about to pick a beetle off a tree limb or on the pair of extraordinary Fantee White-crested Hornbills.

This is not an easy book to use as there are no page numbers. It is definitely for the lover of hornbills and of birds portrayed in fine art, rather than for the seeker of information. It can be ordered from specialist natural history booksellers, such as Wheldon & Wesley Ltd., Lytton Lodge, Codicote, Hitchin, Herts. SG4 8TE, England. Tel: 01438 820370/Fax: 01438 821478.

**Rosemary Low**

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## A Guide to...Pigeons, Doves and Quail

The eighth in its *A Guide to...* series, *Pigeons, Doves and Quail* reinforces *Australian Birdkeeper's* aim to publish 'high quality, informative literature for birdlovers'. It is solid with information, and with useful and beautiful photographs. Immediately apparent from the text is the fact that the author, Danny Brown, has substantial practical experience. Indeed, he has kept 32 of the species described and consistently breeds 22 of them - and he is only in his mid-twenties!

As a veterinary nurse currently studying veterinary science, he can write with authority about every aspect of his subject. The text is weighty and impressive. It commences with detailed information on housing, feeding, handling, 'reproductive manipulation' (artificial incubation), hand-rearing, choosing stock, diseases and administration of medications. In the second part of the book the author discusses every species of pigeon and quail available in Australian aviculture. The detail is remarkable and extends over three to four pages for each species, and includes photographs of excellent quality - three or more for each species and almost all of them in colour. More than 160 colour photographs make this book a valuable identification guide as well as adding greatly to the readers' enjoyment.

The text includes valuable information on the natural food of each species and the correct diet for captive birds. Notes on breeding are also extensive. Concluding the information for each species, Danny Brown acknowledges the help of various aviculturists who have supplied information which has helped to form such a comprehensive text. However, the fact that he draws extensively on his own experience is very apparent. As an example, he recommends that Bobwhite Quail chicks which are being artificially reared should be kept on a floor covering of turkey starter crumbs. This is because they are apt to ingest sand, sawdust, newspaper or similar floor coverings.

Although this book was written primarily for Australian aviculturists, and some of the species of Australian pigeons are not available abroad, this in no way detracts from the usefulness of the book. No one with an interest in pigeons can fail to find much of value and interest within its 184 glossy pages.

It is available from Owl's Nest Bookshop, Birdworld, Farnham, Surrey GU10 4LD, England. UK price £16.95. In Australia it costs A\$29.95, plus postage, from *Australian Birdkeeper*.

**Rosemary Low**

## **Hybrid Ducks - A contribution towards an inventory**

Thirty years ago, when I joined The Wildfowl Trust at Slimbridge as a warden, one of the pens that most fascinated me was the one devoted to the trust's 'mistakes' or hybrids - the progeny of unintentional and certainly unwanted breedings. It was great fun trying to work out the respective parentages.

As I became involved in the more vital business of breeding rare species and keeping them pure (viz. the fate of the White-headed Duck in Spain through the invasion of Ruddy Duck genes) my interest dwindled. Hybrids are something of a freak show or of purely academic interest. To be fair, Eric and Barry Gillham, the authors of this attractive and well written little softback book (104 pages including 16 of colour photographs) do not claim otherwise.

'Trainspotters', waterfowl specialists and those interested in nature's oddities will find this a meticulous and useful contribution to their library.

This book is available from B.L. Gillham, P.O. Box 563, Wallington, Surrey SM6 9DX, England. It is priced £14.00 plus £1.00 p&p (£2.00 overseas).

**Dr Richard Meyer**

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## NEWS & VIEWS

### ANOTHER WORLD FIRST FOR SAN DIEGO ZOO

The world's first captive-bred Crowned Eagle *Stephanoaetus coronatus* has hatched at San Diego Zoo. The female is only four years old and it was thought she might have been too young to breed, while the male was believed to be possibly too old. To stimulate breeding activity, keepers built a nest before the birds were paired and additional nesting material was left in their aviary. Remarkably, they started building immediately upon being introduced. By Christmas they had completed a massive nest measuring some 2.4m (8ft) across. The female laid an egg in March and the pair took turns to sit. Incubation lasted 52 days and the eaglet hatched 22nd April 1996.

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### NOT SO RARE TOURACO

Prince Ruspoli's Touraco *Tauraco ruspolii* is by no means as rare as it was thought to be. Recent surveys in Borana and Bale Provinces of southern Ethiopia have revealed that it is far more widespread than was thought. It has been found there in a number of localities where it had not been recorded before. Neither is it, as was thought, confined to juniper forests, but is found mainly in drier habitats including open woodland and is common even in areas subject to human disturbance.

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### SECOND POPULATION OF LEAR'S MACAWS DISCOVERED

A team led by Dr Pedro Lima of CETREL, has confirmed the existence of a second smaller population of 22 Lear's Macaws *Anodorhynchus leari* and has found its roosting and nesting cliff in a remote valley in north-eastern Brazil. It is located far away from the well-publicised and considerably larger original population. The team also have as yet unconfirmed information about several other isolated and widely scattered populations of this spectacular blue macaw. On the down side, there is reliable information that during the last two to three years, approximately 20 of the original population of 117, may have been trapped illegally, mostly if not entirely near their roosting site.

PsittaScene

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### TWENTY-FIVE MILKY STORKS REARED

San Diego Zoo has reared 25 Milky Storks *Mycteria cinerea* and hopes that in the future captive-hatched birds can be released back into the wild.

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## SPECIALIST GALLIFORMES GROUPS

The World Pheasant Association, along with Birdlife International and the Species Survival Commission, run five specialist Galliformes groups covering pheasants, grouse, megapodes, partridge, quail and francolins. Each group aims to produce half-yearly newsletters to keep interested parties informed of the latest developments. Further details are available from the WPA, P.O. Box 5, Lower Basildon, Berkshire RG8 9PF, England.

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## HOUBARA BUSTARDS BREED IN SAUDI ARABIA

Saudi Arabia's Houbara Bustard *Chlamydotis undulata macqueenii* reintroduction project has achieved a major step forward with the first recorded breeding of captive-bred reintroduced birds. Two nests and a brood of chicks were found in the Mahazat as-Sayd protected area where captive-bred birds were released. This is believed to be the first time in 30 years that Houbaras have bred in south-eastern Saudi Arabia.

Oryx

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## ORIENTAL WHITE STORK REINTRODUCTION POSSIBLE

Plans are underway for the possible reintroduction of Oriental White Storks *Ciconia c. boyciana* into the wild in Japan. A site of some 90ha has been identified in Hyogo Province and the owners have agreed to make land available for the project. The last stork was removed from the wild in 1971 to form part of the captive-breeding programme. These storks are bred now in four Japanese collections.

Re-introduction News

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## GOULDIAN FINCH AN ENDANGERED SPECIES

The Gouldian Finch *Chloebeia gouldiae* is now formally classified as an endangered species. The Australian Nature Conservation Agency has initiated a research programme to try to discover the reasons for its decline and to aid future conservation management. Copies of The Gouldian Finch Recovery Plan are available from the Wildlife Research Unit, CCNT, Box 496, Palmerston, Northern Territory, Australia.

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## NEW HUMMINGBIRD DISCOVERED

A new species of hummingbird has been described from Colombia. The Chiribiquete Emerald *Chlorostilbon olivaresi* is reported to be a common inhabitant of the edaphic scrub and adjacent forests of the middle and upper levels of the Sierra de Chiribiquete, an isolated range of mountains rising from the flat Amazonian lowlands of south-eastern Colombia. A full account of its discovery and biology is to be found in *The Wilson Bulletin*, Vol.108:1-27.

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## GULF WAR CASUALTY

There continues to be concern about the future of the Socotra Cormorant *Phalacrocorax nigrogularis*, one of the main wildlife casualties of the Gulf War. It is endemic to the Arabian Gulf, where its population will continue to be carefully monitored.

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## ONE OF THE WORLD'S RAREST BIRDS

The Christmas Island Hawk Owl *Ninox squamipila natalis*, believed to be one of the world's rarest birds, was the subject of an article in *Wingspan*, December 1995, the magazine of the Royal Australasian Ornithologists Union. It contains much information including nesting data.

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## JUVENILE MALLEEFOWL FAIL TO SURVIVE

Captive-reared 3-5 months old Malleefowl *Leipoa ocellata* failed to survive beyond 104 days, when experimentally released into Yathong Nature Reserve, NSW. The principal cause of mortality was predation by the introduced Red Fox. It accounted for at least 50% and may have accounted for as high as 92%. Twelve older Malleefowl released into the reserve fared better - three of them survived beyond 15 months. Foxes, habitat clearance and fragmentation, habitat degeneration and changes to fire regimes are considered to be the main causes of the overall decline of this species. Details of the experiment were published in *Emu*, Vol. 96:32-41.

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## DEALT A DEVASTATING BLOW

According to recent reports, 41 adult and young Northern Waldrapp Ibis *Geronticus eremita* have died from a mystery illness at two Moroccan breeding colonies. Fewer than 200 remain.



## FORTY-THREE NENE REARED

This year no fewer than 43 Nene *Branta sandvicensis* goslings have been successfully parent-reared at the Wildfowl and Wetland Trust's Slimbridge headquarters in Gloucestershire. Five pairs of Freckled Ducks *Stictonetta naevosa* also reared at Slimbridge, are to be sent to the USA in an initiative organised by the Wildlife Conservation Society at Bronx Zoo, New York. They will be housed at Mike Lubbock's waterfowl collection in North Carolina, and will form a founder population for future breeding programmes.

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## SECOND CLUTCH OF SCOPS OWLS

A second clutch of three White-faced Scops Owls *Otus leucotis* have hatched at the Cotswold Wildlife Park, Oxfordshire. A Maroon Tanager *Ramphocelus carbo*, the fifth this year, has fledged in the Tropical House. Other species bred there this year include Pileated Jay *Cyanocorax chrysops*, Violaceous Touraco *Musophaga violacea* and Nutmeg Pigeon *Ducula bicolor*.

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## SALE OF WORK BY SIR PETER SCOTT

The Wildlife Art Gallery in Lavenham, Suffolk, is to hold an exhibition of work from the late Sir Peter Scott's studio at Slimbridge. The unique collection of 150 works being offered for sale includes oil paintings, pencil and watercolour works, etchings and sketchbook drawings. The exhibition opens 6th October. The catalogue, with a foreword by HRH The Duke of Edinburgh, is available from the gallery (Tel: 01781 248562), priced £10.

\* \* \*

## EXCELLENT BREEDING SEASON

Chester Zoo has been enjoying an excellent breeding season. By the end of July no fewer than 50 species had reared young. The long list includes Congo Peafowl *Afropavo congensis*, Pink Pigeon *Columba mayeri*, Lilacine Amazon *Amazona autumnalis lilacina*, Slender-billed Conure *Enicognathus leptorhynchus*, Lilac-breasted Roller *Coracias caudata*, Wrinkled and Trumpeter Hornbills *Aceros corrugatus* and Bycanistes *bucinator*, Violaceous Touraco *Musophaga violacea* and Rothschild's Mynah *Leucopsar rothschildi*. An account of the Society's visit to Chester Zoo will appear in the next magazine.

\* \* \*

## REMAINS FOUND OF FLIGHTLESS DUCK

Remains of an apparently flightless species of duck have been found on Amsterdam Island in the Indian Ocean. Some of the better preserved bones appear to be no more than a few hundred years old. The species has been named *Anas marecula*.

\* \* \*

## NEWS FROM LORO PARQUE

By the beginning of July, more than 600 young had already been hatched successfully. It is pleased to report the successful rearing of 13 Red-browed Amazons *Amazona rhodocorytha* and four Blue-throated Macaws *Ara glaucogularis*. Other European Species Survival Scheme (EEP) species which have reared young are the Red-vented Cockatoo *Cacatua haematurgypia*, Citron-crested Cockatoo *C. sulphurea citrinocristata*, Moluccan Cockatoo *C. moluccensis*, Hyacinth Macaw *Anodorhynchus hyacinthinus*, Red-fronted Macaw *A. rubrogenys* and Lilacine Amazon *A. autumnalis lilacina*.

Seven Red and Blue Lories *Eos histrio* and five Mount Apo Lorikeets *Trichoglossus johnstoniae*, two species for which Lore Parque has started new European regional studbooks, have been bred, and it is hoped more will be hatched before the end of the year.

As well as the Red and Blue Lory and Citron-crested Cockatoo, other important parrots which have bred at Loro Parque for the first time, include Golden-winged Parrakeet *Brotogeris chrysopterus*, Bernstein's Lory *Chalcopsitta atra bernsteini*, Bronze-winged Pionus *Pionus chalcopterus* and Yellow-lored Amazon *A. xantholora*.

New arrivals include Blue-headed Macaws *A. couloni*, of which one pair are on exhibition in the park, and a second more mature pair are housed in an off-exhibit breeding area. With the arrival of three pairs of Tui Parrakeets *B. sanctithomae*, Loro Parque now exhibits all the species of *Brotogeris* parrakeets .

\* \* \*

*News & Views was compiled with the help of Dave Coles, Frank Woolham and others. If you have items for inclusion in the next magazine, please send them, as soon as possible, to:-*

*Hon. Editor, The Avicultural Magazine, The Chalet, Hay Farm, St. Breock, Wadebridge, Cornwall PL27 7LH, England.*

## CAN YOU HELP?

Mauro Galetti, whose most recent publication (with co-authors Marco Aurelio Pizo & Isaac Simao) was on Diet and Flock Size of Sympatric Parrots in the Atlantic forest of Brazil (*Ornitologia Neotropical*, 6: 87-95, 1995), is completing his PhD at the University of Cambridge and next year will be teaching at the Universidade Estadual Paulista (State University of Sao Paulo) in Brazil. It has 775 faculty and students members and the main research is ecology and natural history of the biodiversity of the Atlantic forest.

The main problem in conservation biology in Brazil is finding qualified people to continue long-term research projects, management and environmental education. The Universidade Estadual Paulista (UNESP) is contacting several young Brazilian researchers with PhDs from abroad that could help train more qualified researchers and students in Brazil.

Libraries are essential for research and are a main priority for the Universidade Estadual Paulista. Unfortunately, Brazilian universities are critically short of money to subscribe to journals and buy books. Mauro Galetti is seeking someone willing to donate a subscription to the *Avicultural Magazine* to the Universidade Estadual Paulista, to help improve the access to information for students and local researchers. If you would like to help, Mauro Galetti's address is:- Wildlife Research Group, Department of Anatomy, University of Cambridge, Cambridge CB2 3DY, England.

\* \* \*

## APOLOGY/CORRECTION

Ed Lewins, Lead Keeper in the Bird Department at San Diego Zoo, wrote the article titled, Captive Breeding of the Lesser Green Broadbill, *Avicultural Magazine*, 102,1:1-5, not 'Ed Lewis'. The Hon. Editor offers sincere apologies to Ed Lewins on behalf of the Council of The Avicultural Society.



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# AVICULTURAL MAGAZINE

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1996



## THE AVICULTURAL SOCIETY

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Membership subscription rates per annum for 1996 as for 1995: British Isles £18.00: Overseas £21.00 (plus £6.00 for airmail). (U.K. funds please). The subscription is due on **1st January of each year** and those joining the Society later in the year will receive back numbers of the current volume of the AVICULTURAL MAGAZINE.

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THE AVICULTURAL MAGAZINE welcomes original articles that have not been published elsewhere and that essentially concern the aviculture of a particular bird or group of birds, or that describe their natural history. Articles should be preferably typewritten, with double spacing, and the scientific names as well as the vernacular names of birds should be given. References cited in the text should be listed at the end of the article. Line drawings should be in Indian ink on thick paper or card; black and white or colour photographs which illustrate a particular point in the article will be used where possible and should be clearly captioned. If authors wish their eventual return, they must say so when submitting the article and write their name on the back of each photograph.

## ADDRESS OF THE EDITOR

Malcolm Ellis, Hon. Editor, The Avicultural Magazine, The Chalet, Hay Farm, St. Breock, Wadebridge, Cornwall PL27 7LH England.

# AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY

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## NOTES ON HAND-REARING A TAWNY FROGMOUTH AT THE OKLAHOMA CITY ZOOLOGICAL PARK

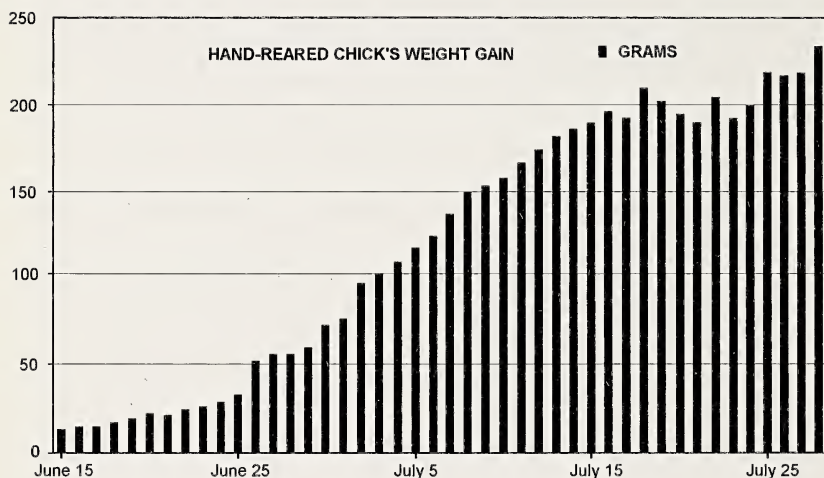
by James R. Fish

The Oklahoma City Zoological Park had since May 1986 exhibited a single male Tawny Frogmouth *Podargus strigoides* in a cage approximately 8ft x 8ft x 12ft (2.4m x 2.4m x 3.6m). Because of the difficulty in securing a female frogmouth, it was not until 1990 that the male was paired with a young female from San Antonio Zoo.

Although the pair was not often observed perching together, it was evident that there was no aggression between them. The male appeared much larger than the female and there was some concern for her safety, especially in view of the fact that the female was a hand-reared bird weighing 347.5g, and the male, at 550g, outweighed her by approximately 63%. While the two were largely sedentary during the day, after several weeks it was obvious that they were active during the hours of darkness, for the limbs and substrate showed signs of the birds' nightly activities, which eventually began to include nest building. A small bowl-shaped wire platform with sphagnum moss, located in the middle of the exhibit on a stout perch, was selected by the birds. Initially, two eggs were laid and incubation by the male during the day commenced immediately. Unfortunately, the flimsy nest consisting of a few twigs and leaves did not prove sufficient to cushion the eggs and both were found broken in the next three days. The decision was then made to remove the next egg and attempt to hand-rear the chick.

On 17th May 1991, a further egg was laid. It was removed and placed in an incubator at a temperature of 98.5°F (36.9°C) and the wet bulb at 84-85%. On the 29th day, the egg pipped properly and hatched normally on the 30th day. The chick was allowed to dry for 24 hours and then placed in an infant care isolette at a temperature of 90°F (32.2°C), where it seemed comfortable. The chick was covered with long white down which turned grey over the next few weeks. Initially, the chick was offered bits of finely chopped pinkies at 8.00am, 11.00am, 2.00pm, 5.00pm and 8.00pm. It accepted these readily as well as ¼in (7mm) crickets which were offered

once a day. The food was sprinkled with Vionate powder. The hand-rearing was fairly uneventful with the bird increasing its food intake gradually over the seven week hand-rearing period and weigh gain was fairly steady as indicated on the accompanying graph.



After the first two week period the temperature of the isolette was reduced gradually by approximately 5°F (2.8°C) until it reached room temperature on approximately 16th July 1991. At this time, the bird weighed 197.9g and was being offered whole pinkies, crickets with the legs removed and chopped mice. On 18th July 1991, the bird was transferred from the isolette to a brooder-box equipped with perches, food and water, and hand-feeding continued until it was eating on its own on 31st July. The bird began flying on the 23rd July, during hand-feeding sessions, and care had to be taken to prevent it injuring itself. Later in 1991 it was sexed as a male and sent to Riverbanks Zoo.

*James P. Fish is Curator of Birds at Oklahoma City Zoological Park  
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## BREEDING GOULDIAN FINCHES

by Anthony J. Mobbs

Of all the Australian finches, the Gouldian Finch *Chloebeia gouldiae* has the most pronounced breeding cycle. Failure to understand the needs of the species can often lead to disappointing breeding results.

Before placing the birds in their breeding quarters, one should ensure that both the male and the female are in full breeding condition. It is usual for females when in breeding condition to have beaks which are almost black in colour. However, this is not always so, as I have had females go to nest and successfully rear young with little or no colour change to their beaks. More obvious signs are when a female is seen to become 'heavy' around the area of the vent, with a pronounced rise to the rump and with the tail held in a downwards position.

The females of many Australian finches, when eager to nest, often lay eggs on the floor of the cage, even when they are housed alone or with others of the same sex. I have never experienced this with Gouldians, although females which have already reared two rounds of chicks and have then been placed in resting cages (see later), will occasionally lay one or two eggs immediately after being removed from their breeding quarters.

Males in breeding condition usually have an almost white beak, with only the tip coloured. When eager to nest, males continually hang on the bars of their cage, calling almost continuously to the females. The latter will usually answer them.

Pairs should be placed in their breeding quarters at the same time, or alternatively the male can be placed in the breeding cage a few days before the female is introduced. Under no circumstances should the female be placed in the cage before the male, otherwise she may prove so dominant that the male will never assert itself and mating will not take place.

Nest-boxes should be placed in position before the birds are introduced to their breeding quarters. Gouldian Finches can prove to be poor nest builders, many pairs rarely taking any material into the nest. Because of this, the boxes should first be filled with soft hay into which one has pushed one's fist to make a nest hollow.

Some pairs may add material to the nest and because of this, a certain amount of soft hay should be placed on the floor of the breeding cage. Under the nest-box is the ideal place to put it as this will help prevent the material becoming soiled with droppings. The type of hay used is most important. Gouldians appear to move about in the nest, especially during incubation and if short pieces of hay are supplied, these, due to the movement of the birds, often become so brittle that eventually they cover the eggs, thus causing the pair to desert their eggs. I always supply pieces at least 23cm (9in) in length. It is also important to supply hay which is as fresh as possible.



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**One day old Gouldian Finch chicks. Note the type of hay used in nest building.**

Gouldian pairs in peak breeding condition will usually go down to nest within 14 days of being placed together. Mating usually takes place in the nest (I have yet to observe a pair mating from a perch). Although either one or both birds may spend a certain amount of time in the nest soon after egg laying has commenced, actual incubation will not commence until the final egg of the clutch is laid. Both birds share incubation during the hours of daylight, however, only the female incubates during the night period and it is rare to find a male which remains on the nest overnight. If it does, then one can almost guarantee that it is not actually incubating.

The eggs take between 12-14 days to hatch and when the chicks are ten days old, the parents cease to brood them. If one intends to fit closed-rings on the chicks, then this is the time to do so, as well-fed Gouldian chicks are ready at ten days old. The chicks leave the nest when they are approximately 25 days old. When they are one month old, I always remove the nest-box, otherwise the parents may attempt to go to nest before their young are fully weaned.

The chicks should be seen to be feeding themselves by the time they are five to six weeks old. They can then be removed and placed in 'growing on' accommodation. If the breeding cage is then thoroughly cleaned and the nest-box (which should have been cleaned when it was removed earlier) placed in position again, the breeding pair should commence their second clutch within a week or so.





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**Gouldian Finch chicks at 9 days old.**

The Gouldian is the only Australian finch from which I remove the nest-box between each clutch. If the nest-box is left in position, there is every possibility that the second clutch of eggs will prove infertile, due to the breeding pair being unable mate properly because of interference from their chicks.

When breeding pairs have successfully reared two rounds of chicks, the sexes are segregated and housed in 1.8m (6ft) cages to rest and moult.

Gouldians will breed successfully in roomy cages or in aviaries. However, they should be housed in the latter only during the warmer months of year and even then, the nest-boxes should always be placed in the shelter. When breeding, Gouldians require the temperature to be not less than 18°C (64°F). If kept at lower temperatures, there is a possibility the chicks will succumb, due to the parents ceasing to brood when the former are ten days old. Non-breeding birds can be kept at lower temperatures, but even then I would not recommend the temperature be allowed to fall much lower than 15°C (59°F) - especially during the moult - if the birds are to remain fit and healthy.

Gouldians revel in heat. On hot summer days the temperature in my indoor birdroom may reach as much as 30°C (86°F). In spite of this, I have



yet to witness a Gouldian Finch which has shown any signs of stress when experiencing such high temperatures.

My breeding cages, which are of the box-type, i.e. enclosed on all sides except for the front which is fitted with a conventional style punch bar cage front, are 91cm x 41cm x 41cm (36in x 16in x 16in). I consider this to be the minimum size for successful breeding. One can of course use larger cages if one so wishes. All are painted pale green on the inside (I use vinyl emulsion) and black outside with the cage fronts also painted black (one can use either blackboard paint or black emulsion). White cage fronts, or those left unpainted make it difficult to view the inmates. The overall length of each of my cages is in fact 1.8m (6ft). During the breeding season a plywood divider is placed in the centre. Out of the breeding season, the dividers are removed and the cages then prove ideal for young birds or resting adults. I would recommend than no more than ten birds are housed in a 1.8m (6ft) cage.

The basic diet consists of white and panicum millet, plus plain canary seed. These seeds are fed in separate bowls rather than given as a mixture as I find that not only does this avoid waste, it also means that breeding pairs which may be partial to a certain type of seed, can take such seeds more quickly and thus feed their chicks more readily. Mineralised and fine oyster shell grit is available permanently, as is cuttlefish bone. A piece is placed in a clip attached to the cage front and breeding pairs are supplied with flaked cuttlefish bone. Every other day a small amount is placed on top of the grit. The shells from hens' eggs are also supplied regularly. These are first placed in boiling water and allowed to simmer for about 15 minutes, after which they are removed and allowed to thoroughly dry out before being stored in a screw-top jar ready for use. I find that Gouldian Finches prefer these shells to be offered in fairly large pieces rather than being broken into small fragments (as I do for my other Australian finches). Any pieces which have not been eaten within a few hours are removed from the cage and discarded.

Gouldian females are particularly keen on charcoal granules and these are permanently available in a small bowl on the cage floor. Adult pairs with chicks are supplied with sprouted seeds regularly each day. Weaned chicks are also offered these seeds until they have moulted into full adult plumage. I use 50/50 budgerigar mixture, as I find this far superior to foreign finch mix as usually the latter contains large amounts of panicum millet, which proves almost impossible to sprout. Certain pairs may be persuaded to take a proprietary brand of egg-food which obviously proves beneficial to the chicks. Spray millet is permanently available and greenfood, such as freshly washed lettuce leaves, is supplied twice a day to pairs feeding chicks and weaned chicks in immature plumage. Non-breeding birds are offered greenfood every other day.

*Anthony J. Mobbs is the author of, among other books, Gouldian Finches and The Complete Book of Australian Finches.*

## SOME OBSERVATIONS ON THE BEHAVIOUR AND CARE OF THE CHINESE PAINTED QUAIL

by Janice L. Pappas

For almost 15 years, I have been involved in aviculture. After reading a magazine article about 'Button' Quail, I became interested in raising these birds. Of course, I soon found out that the article actually referred to the Chinese Painted Quail *Excalfactoria chinensis*. I did extensive research at university libraries trying to find out everything I could about these fascinating little birds. This led me to articles in the *Avicultural Magazine* by E.G.B. Meade-Waldo (1898), C.J.O. Harrison (1968, 1973), C.J.O. Harrison, *et al.* (1965), J.J. Yealland (1962), and G.E.S. Robbins (1979).

From earlier times to the present, my experience with these quail has been very rewarding. I have over the years kept records of the behaviour of my Chinese Painted Quail. Here I would like briefly to share my observations of what I consider to be contrary or unexpected behaviour by these birds and some of my experiences caring for them.

One of the more interesting aspects involved one of my silver females. On a number of occasions, she would give the tid-bitting call. Her male partner in the same cage would stop and look at her. I cannot say if he was confused or merely pausing. To date, she is the only non-male to enunciate this call. In contrast, I had a silver male (brother of the aforementioned female) which would give a call of high-pitched notes in rapid succession. This is the same call I have heard many times coming from my female quail when they were incubating eggs and their male partner came near. Another silver female (the mother of the aforementioned female and male) had been plucked down the middle of her back by another quail at the breeder's home where I bought her. After pairing her with my oldest silver male, she proceeded to do the same to him in the very same way. A third, normal-coloured female, was expert at aiming for the small door to her cage. The door was about two-thirds of the way up from the bottom of the 2½ft (76cm) high cage. If I left the door unlatched, she would judge the opening perfectly and hop out of the cage. I have a silver male which likes to ring a little bell suspended on a wire attached to his cage. He jumps up on his little platform where he can reach this bell and pecks at it to ring it.

I have talked with breeders who have had a great deal of trouble with females that will not brood their eggs. Over the years, I have been fortunate in that most of my females have brooded their eggs. In fact, one broody

female raised three hatchlings all by herself. In other cases, I have assisted the female with her duties.

In terms of caring for them, I have seen many health conditions manifested in my little birds. I would like to recount some of these conditions and the treatments involved in trying to keep my quail in top shape. With the females, I have had to be vigilant in making sure that they consume oyster shell or calcium supplement to offset the constant egg laying that occurs.

The very first female I had died as a result of insufficient calcium, despite being fed this supplement, as well as a superb diet. Upon examination by a veterinarian, she was found to have reduced bone mass. She was losing weight and not metabolizing calcium because this was going to producing the eggshells. In addition, the female was not metabolizing nitrogen. Consequently, she was accumulating nitrogen in the form of ammonia in her body. The ammonia acted as a toxin which caused her death. Her behaviour belied her condition, for she acted normally and produced perfect eggs. I only discovered this problem because I found her in her cage with a broken wing. Since then, I have had another female which laid well-developed eggs and two which produced thin-shelled eggs. All three died as a result of becoming egg-bound.

More recently, another female was acting lethargic and had, I discovered, a swelling in her abdomen. Over the previous few months, I had noticed that the female, which was only a little over one year old, was laying eggs with thin shells. I decided that she had an impacted oviduct. I gave her an antibiotic which reduced the swelling considerably but not entirely. I read in a veterinary manual that peritonitis may result from an impacted oviduct. After I tried for about two weeks to remedy her situation, she died.

In isolated instances, I have had quail infected by pox via mosquitoes, infected by *Capillaria*, and develop tumours. The *Capillaria* infection was in most instances treated successfully with an anthelmintic drug. Whenever I have had a quail develop a bacterial infection, treatment with various antibiotics has produced recovery. Whenever I have a sick quail, initially, I place the bird in an isolated, comfortable setting, with a heat source. I feed the bird an electrolyte solution to remedy dehydration and a soya-based baby formula to increase calorific intake. Subsequently, I feed the bird a peanut butter/cornmeal crumbled mixture which also has vitamin and mineral supplements added. I have also found that small, whole, cooked peas are an excellent dietary supplement.

I would like to conclude by mentioning my two male quail which would be considered to have been elderly birds. A short time prior to its death,



one developed cataracts and therefore could no longer see its food. The other ate only mealworms for the last two and a half months of its life. It had stopped eating seeds and was losing weight, however, when I offered mealworms, it chose these as its means of subsistence. Both males lived to be about six years old. Neither was interested in crowing during the last few months of their lives, despite being active, happy, little birds.

Chinese Painted Quail are some of the nicest birds to raise. Their interesting behaviour and calls are a constant source of delight. Because of their diminutive size, their health problems are not always easy to treat. However, it is well worth the effort to keep and raise these wonderful little birds.

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*Janice L. Pappas lives in Ann Arbor, Michigan, USA.*

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## THE RED-BROWED AMAZON PARROT EEP SCHEME

by Roger G. Sweeney

The Red-browed Amazon Parrot *Amazona rhodocorytha* is endemic to Brazil, where it is found in a narrow strip along the eastern coast. It is found in the state of Alagoas and from Bahia and eastern Minas Geras, south locally to Rio de Janeiro. Its preferred habitat is generally lowland humid forest, although it has also been recorded at altitudes of up to 1,000m (3,280ft) in undisturbed forests. Most reports refer to this species being located mainly in primary forest, with little sign that it can adapt to areas which have suffered large scale disturbance.

The primary threat to its survival comes from long-term habitat clearance. A trade in wild-caught birds existed in the past, but Brazilian national legislation has now stopped any trade in the exportation of these birds from Brazil. A local trade in nestlings for sale as pets has continued in recent years but only in very small numbers and this is also being more tightly controlled now. Probably the most clear need for *in situ* conservation of this species is to secure the protection of some of the key regions of its habitat. The most important region, Bahia, is protected now but other parts of its range are still vulnerable to disturbance. The Red-browed Amazon measures about 36cm (14in) in overall length and weighs about 450-480g, making it one of the largest *Amazona* species found in mainland South America. The coloration of this species is particularly beautiful. As with most *Amazona* species the main body plumage is green, with the most striking feature being the lovely head coloration. The forehead and crown are red, and the cheeks and throat are blue. Between the red of the forehead and blue of the lower face is an area of yellow which covers the lores. The extent of this yellow is highly variable, some birds have only a few yellow feathers, while others have all the lores and the top of the cheeks completely yellow. In our experience of a large number of these birds, the amount of yellow varies from bird to bird and is not an indication of sexual dimorphism.

The Red-browed Amazon was only ever exported in small numbers and has always been rare in aviculture. The captive population in Europe is therefore based on only a small number of founder birds, which have been in captivity for many years. Only a very small number of these have reproduced during this long period of captivity. The small number of founder birds which have bred, have done so consistently for several years, but have produced a first generation population which is very closely related. These first generation birds were sold by the main private keeper who was breeding this species, often with little information about their exact parentage. As these birds have passed from keeper to keeper, often a new

bird has been purchased in the belief that it is unrelated to its new owner's other birds, when in fact the new bird is just as closely related as those already in the new owner's possession. Indeed, most current first generation pairings are of birds from the same parents. With the founder population showing little breeding activity despite many years in captivity and with only a few first generation birds being reared, in most cases, paired to a clutch-mate, the future for this species in captivity was not very hopeful.

When the results of a survey of Amazon parrots in European zoos were analysed to see which species were most important for captive population management, the Red-browed Amazon was a clear choice. Loro Parque was the obvious institution to coordinate an EEP (European Species Survival) scheme for the Red-browed Amazon, because of the large number held in the collection owned by the Loro Parque Foundation. A proposal to form an EEP for the Red-browed Amazon was presented early in 1994 and approved late in the summer of the same year. The first step was to identify more clearly the captive population in Europe which could be included in a managed population. All known holders of this species identified in the European survey and also private keepers were sent studbook registration forms and by early 1995, the first edition of the European regional studbook was produced for the year ending 31st December 1994.

The first edition listed 71 Red-browed Amazons in collections willing to allow their birds to be included in the EEP. Several more private keepers also made initial contact but have proved slower to commit to full membership of the EEP scheme. When reviewing the population, it was clear that a great many founder birds were held in zoological collections which had failed to breed them. Also, several collections held only single birds which were important founders. Moving and pairing some of these would prove to be difficult. Some were placed with zoos by national authorities after they had been confiscated, and were therefore subject to restrictions covering their movement to other countries. Also, as so few were being bred, no collection had surplus birds, but rather wanted to add to their collection, and nobody was willing to move a bird they already held. If the EEP scheme was to succeed the most important thing was to initiate breeding by previously unproductive founder birds.

The emphasis was again on Loro Parque, which at the time held 25 of the population's birds, and also Palmitos Park, which held 12 birds. They had to stimulate breeding by their birds. The other European collection which held a substantial number, Walsrode, with 12 birds, had already bred successfully from them in 1993 and 1994.

In the early months of the 1995 breeding season at Loro Parque we had already taken the initiative and placed about 20 of our Red-browed Amazons, those which showed least interest in courtship and breeding, into a large



communal flight cage. Along the back wall of this, nine breeding cages adjoined each other: they measured 3m (9ft 9in) in length and had a nest-box at the far end. Very close attention was paid to the behaviour of the birds in this communal situation, even though we did this before the start of the breeding season, to reduce to a minimum the chances of aggression. Actual aggression was not a major problem, but we did note that two or three birds seemed to be intimidated by these circumstances. After a few days they had to be removed from the communal flight cage and were kept separately and given mates later after the main pairing exercise had been completed. Carefully, birds which showed pair-bonding behaviour were separated from the group and the result was that in 1995, Loro Parque recorded its first breeding success with the Red-browed Amazon, with five chicks being reared to independence, from two different bloodlines. At the time of writing this, in early July 1996, a further 13 chicks are being reared at Loro Parque and we feel confident of increased success over the next few years. Meanwhile, at Palmitos Park, a first time success was also recorded in 1995, when a single chick was reared by foster-parents. This was described by Rosemary Low in the *Avicultural Magazine*, Vol.102, No.2: 49-55. In June 1996, there were two chicks in the nest there.

In the two years since the Red-browed Amazon Parrot EEP scheme was initiated and the European regional studbook formed, several formerly unproductive founder birds in the population have started to breed. Over 30 Red-browed Amazon chicks have been bred successfully in 1995 and 1996 within the EEP population, 18 of these at Loro Parque. The growing number of young being produced will increase the opportunities to move and exchange birds to form unrelated pairs and, hopefully, bring all known founder birds into a potential breeding situation.

The second edition of the European regional studbook will be produced early in 1997. I strongly urge all those with Red-browed Amazons, who have not already been in contact with me, to consider cooperating with the EEP scheme. This will enable the population of first generation birds to be paired to unrelated partners and the future of the European captive population to become established. Given the uncertain prospects for this species in the wild, an established and well-managed captive population must be considered of great conservation value for the future.

*Roger G. Sweeney is Curator of Birds at Loro Parque, 38400 Puerto de la Cruz, Tenerife, Canary Islands, Spain, and can be contacted there regarding the Red-browed Amazon Parrot EEP scheme.*

# PARROT CONSERVATION, AVICULTURE AND THE LORO PARQUE FOUNDATION

by David R. Waugh

## Introduction

The Loro Parque Foundation (Loro Parque Fundación (LPF)) is a non-profit making, non-governmental organisation based at Loro Parque in Tenerife, Canary Islands, Spain, from where it operates on an international basis to promote the conservation of parrots, the environment and sustainable development. A fundamental element of this is to encourage responsible aviculture to realise its tremendous potential to contribute to conservation of threatened species of parrots. As a member of the IUCN, the world conservation union, the LPF adheres to consensus guidelines for the best conservation outcomes for combined *in-situ*/*ex-situ* programmes. In particular, the donation by Loro Parque of the world's largest and most diverse parrot collection to the LPF has bestowed the latter with a heightened responsibility to support *in-situ* conservation action. Thus, as a major donor to field projects, the LPF now forms part of a growing movement among zoological parks and within aviculture to help underpin the conservation of species within their natural habitats, as recently summarised by Hutchins and Conway (1995).

The LPF inherited the support provided to some long-term conservation programmes from that given previously by Loro Parque, particularly in the period 1987 to 1994, the year that the LPF was created. Given the specialised interest of Loro Parque in the *Psittacidae*, the LPF has continued to focus on conservation work that involves species within this family, especially the more threatened forms. Thus the conservation and welfare needs for parrots are dealt with by the LPF in accordance with what are accepted as priority issues by the broader conservation community. Through Loro Parque, the LPF participates in cooperatively managed captive breeding programmes, for example being the coordinating entity for the *Amazona rhodocorytha* and *Ara glaucogularis* EEPs (European Species Survival schemes). Both of these involve zoological institutions and private breeders who understand the conservation advantages to the species in question, as well as the advantages to aviculture in general which can result from proper management of captive populations. Where reservations have been expressed (for example Beissinger and Snyder, 1992) about the current viability of certain conservation options for parrots, in particular sustainable harvesting and captive breeding, the LPF encourages aviculture to contribute to the efforts to substantially improve the latter.

## **Objectives and Operations**

### **Community-based Conservation**

The LPF approach to conservation is intended to integrate the needs of people and parrots, by encouraging local community initiatives which bring permanent benefits through wise use of the local environment. The LPF focuses on parrots because they are good indicators of the health of the environment in which they occur and, because they are very noticeable, charismatic birds, parrots can be very effective as 'flagships' (Dietz *et al* 1994) to attract more assistance to projects which integrate natural and human rural communities with environmental safeguards and economic improvements.

### **Education Programmes**

An essential part of the process in encouraging people to care for the environment is to inform them of the benefits that will result. Using parrots as environmental emblems, the LPF directly supports grassroots community education programmes in countries where parrots occur. It also strongly assists with the continuous development of the education programmes based at Loro Parque, which use the animal collection as an educational resource.

### **Field Projects**

Also based in the countries where parrots occur, the LPF finances comprehensive field projects which produce the information for conservation management and for local communities to use for improved land and natural resource use. Ecological studies, parrot population monitoring, reintroduction, protection measures and defining habitats for preservation and extractive uses are all essential components of these projects.

### **Captive Projects**

In cases where parrot species have become seriously depleted in the wild state, LPF organises and participates in coordinated programmes to establish and maintain sufficient populations in captivity as a safeguard against their extinction. Thus it incorporates the avicultural dimension, while working to help parrots recover in the wild state.

### **Training and Research**

Using the parrot collection at Loro Parque as a valuable resource, the LPF provides excellent opportunities for dedicated people from around the world to gain very effective experience in parrot care and conservation, as well as for researchers to make discoveries which will assist this process. Again, it utilises the wealth of information that the responsible avicultural community can provide.



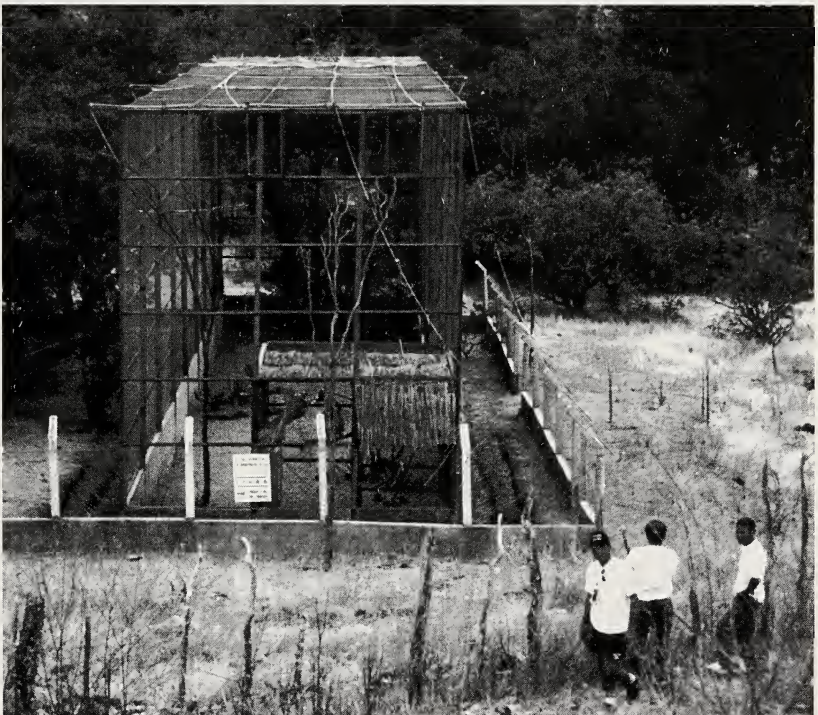
## Dissemination of Information

It is essential to inform the widest possible audience about the conservation needs of parrots and how local people can be the best custodians of them and their environment. Thus, the LPF has an informed membership, produces a quarterly publication *Cyanopsitta*, publishes popular and scientific articles, and every four years organises and hosts an International Parrot Convention which constitutes an excellent global forum to discuss all issues affecting parrots and their habitats.

## Project Illustrations

### Spix's Macaw

The LPF is principal financial supporter of the recovery effort for the critically threatened Spix's Macaw *Cyanopsitta spixii*, endemic to the dry north-east region of Brazil where the only existing wild bird, a male, is monitored and protected, and where a female was reintroduced to the wild in 1995. This project also encompasses habitat protection and restoration, local community involvement and education, as well as the exacting process of re-establishment of birds to the wild. From a low of only 11 birds in



David Waugh

Spix's Macaw acclimatisation and release aviary in north-east Brazil.

captivity in 1988, there are now 37 (75% captive-bred) registered in the International Studbook. This encouraging increase in the total world population has occurred under the close management of the Permanent (International) Committee for the Recovery of the Spix's Macaw (CPRAA), of which the LPF is a founder member in collaboration with the Brazilian Government wildlife authority, IBAMA. In addition to the Brazilian Government, the committee includes representatives from Brazilian and international aviculture, and the zoological and scientific communities. Grassroots support of the local community in Curaca has firmly established the Spix's Macaw as the unique emblem of the region.

### **Halmaheran parrots, Indonesia**

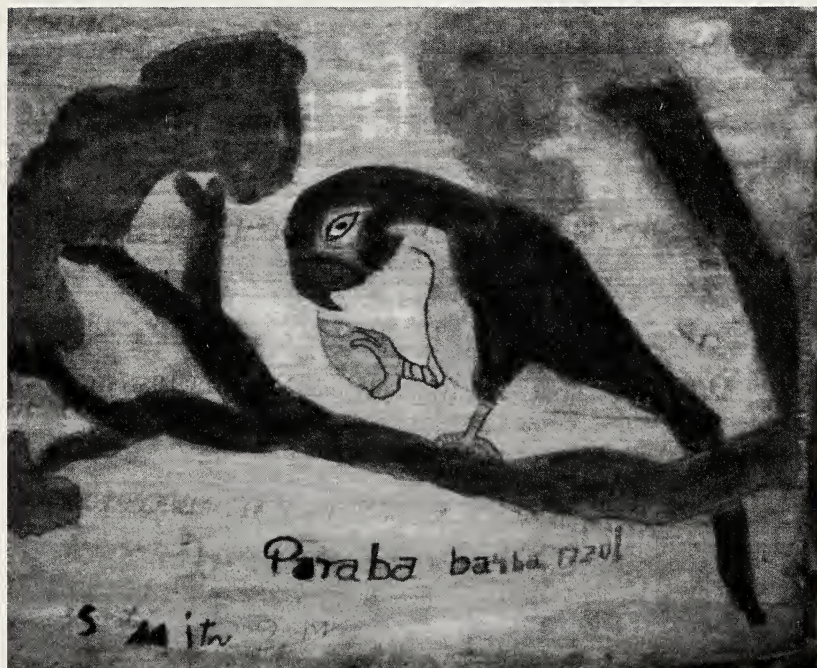
This island in the north Moluccas is home to no less than nine species of parrot some of which, like the White Cockatoo *Cacatua alba* and Chattering Lory *Lorius garrulus*, are globally threatened. The LPF has funded a comprehensive species and habitat survey, implemented by Birdlife International and the Indonesian Directorate General of Forest Conservation and Nature Protection. By careful attention to the scarcity of some species in forest on ultra-basic substrate, and the decline in bird densities above 700m (about 2,300ft) altitude, preliminary results form a strong case for the gazetting of 350,000ha (about 865,000 acres) of prime habitat as a new national park, and recent representations to the Indonesian Government could, with the support of the World Bank, result in the establishment of this protected area.

### **PDD Research**

Proventricular Dilatation Disease (PDD) poses a serious threat to aviculture and the management of threatened parrot species in the wild, particularly those with very small populations. The reintroduction of birds from captivity to the wild is a problem issue until we have more knowledge of cryptic diseases such as PDD. Currently there is no known way of combating this disease which is spreading and becoming a global problem. The disease has now been recognised as infectious, probably with a viral causative agent, and no birds with confirmed PDD have survived. In the order Psittaciformes alone, PDD has been reported in more than 50 species, including cockatoos, lovebirds, conures, amazons, macaws and parakeets. The LPF is thus providing major collaborative funding, with the International Avian Research Fund, Inc., to the Psittacine Disease Research Group (PDRG) at the University of Georgia, USA. The PDRG has an excellent reputation for research into psittacine diseases. Due to its earlier work, Psittacine Beak and Feather Disease (PBFD) can be avoided now by



use of a diagnostic test and polyomavirus, a major cause of death in young parrots, can be dealt with using a vaccine.



Alan Hesse

Blue-throated Macaw painted by a local school child in Beni, Bolivia.

### Blue-throated Macaw

The Bolivian NGO, Armonia, is funded by the LPF to census the population of the highly threatened *Ara glaucogularis*, and develop conservation management measures involving local people. The latest reports from Armonia indicate an alarming situation with may be fewer than 100 individuals remaining in the wild, while habitat destruction continues and the illegal removal of young from the nests is a persistent threat. With continuing support from the LPF, Armonia will increase its positive working relations with local landowners to curb habitat loss and improve protective measures. At the same time it will continue the census work and to develop its educational programme for the local people of Beni, the native region of this enigmatic species. With such a high profile within aviculture, this is a species which responsible aviculturists can really help in no small measure.



### Dominican parrots

The threatened Imperial Parrot *Amazona imperialis* and the Red-necked Parrot *A. arausiaca* are principal beneficiaries of LPF support for ecological studies which form the basis of a sustainable forest and agriculture management scheme, land purchase for forest protection, and development of national park infrastructure including boundary definition, trails, and tourist and educational facilities. This has been achieved through support to the Dominica Multiple Land Use Project run by Dr Peter Evans of Oxford University, and the Forestry and Wildlife Division of the Government of Dominica, via Birdlife International.



Imperial Parrot, Dominica.

Peter Evans

### Red-tailed Parrot

*Amazona brasiliensis* is a species endemic to the coast of south-east Brazil, also suffering from heavy nest-poaching and even the capture of adult birds. The LPF is continuing to finance work to combat this problem in Paraná State, through Pedro Scherer Neto of the Curitiba Natural History Museum. This work includes regular monitoring of the population - about 3,500 birds in total - and increasing the opportunities to hinder the illegal removal of the birds and nest-tree destruction.

### **Rusty-faced Parrot**

This parrot, *Hapalopsittaca amazonina*, is little-known but sufficient evidence exists to include it in the IUCN category of endangered. For this reason, the LPF, jointly with Fonds Für Bedrohte Papageien, is funding important surveys and fact-finding investigations in the Venezuelan Andes by Provita, an NGO of the same country. This is a considerable task, given that it is an extremely sparsely distributed, cloud-forest species, and also because destruction of its forest habitat continues, even in the El Tamá National Park in Táchira State.

### **Yellow-eared Conure**

Another co-sponsor venture with Fonds Für Bedrohte Papageien involves the protection of the critically threatened *Ognorhynchus icterotis*. This conure of stunning appearance is known now only from two sites within its previous broader geographical range, one in Ecuador and the other in Colombia. Dr Niels Krabbe (Museum of Zoology, University of Copenhagen, but based in Ecuador) will lead the team which will try to bring this species back from the brink of extinction, firstly by focusing on the approximately 20 individuals at the Ecuador site. This species has a strong biological affiliation with the Wax Palm *Ceroxylon andinum*, a tree species which has declined dramatically due to habitat destruction and is now further threatened with a disease thought to occur as a result of the combined action of a beetle and a fungus species. The Yellow-eared Conure project will involve the monitoring of the known birds, educational work in local schools, habitat protection including the re-establishment of Wax Palms, and research on behaviour, nest sites, feeding and food palms, and the distribution outside of the breeding season.

### **Moluccan Cockatoo**

*Cacatua moluccensis* has been the subject of much unregulated trade, to the point where considerable concern exists about its status in the wild. The LPF is involved in two separate initiatives to investigate the current situation regarding this species in its native Seram, Indonesia. The first is to provide financial support to a University of Cambridge team which this year is investigating the biodiversity in, and potential threats to a previously unsurveyed area called Wae Bula. *C. moluccensis* will be a high-profile species in their work. The second initiative, a joint venture between the LPF and Kakadu United Magazine, will be centred on the Manusela National Park and surrounding unprotected areas. The LPF will oversee this project, which is intended to document the current impact of unregulated or poorly regulated trade on the local wild population of this species, and produce workable conservation management recommendations acceptable to the local people.

## **Tumbesian parrots, Ecuador**

In the dry south-west of Ecuador, within the Tumbesian area of endemism, occur several species of parrots which have restricted ranges, such as the Masked Conure *Aratinga erythrogenys*, and/or are highly threatened, such as the Great Green Macaw *Ara ambigua guayaquilensis*. The LPF is providing funding to another University of Cambridge team which is undertaking census work on these parrots, as well as searching for and monitoring the nest sites of *A. ambigua*, particularly in the Cerro Blanco Reserve, at the invitation of the local NGO Fundación Pro-Bosque.

## **Discussion and Conclusion**

The range of projects illustrated shows that the LPF exists first and foremost to help prevent the extinction of highly threatened parrots. It works with highly motivated and well-organised people where the problems need to be tackled, and links these with aviculturists who want to increase their contribution to the conservation of the species that provide them with so much enjoyment. The total of US\$208,000 (approx. £140,000) support to projects during 1996 can make a real difference, but these funds are always hard-won and there is a constant search for ways to diversify our sources of income.

Loro Parque is a constant supporter of the LPF, in particular with its donation of the entire parrot collection of some 2,500 birds. As a way to supply the demand for parrots from a captive-bred source rather than from the wild, the breeding surplus from the parrot collection provides the LPF with one means to secure income for direct *in-situ* conservation projects. The LPF and Loro Parque carefully monitor sales of surplus birds to ensure that direct use of the funds for *in-situ* conservation remains compatible with cooperative breeding programme agreements and the welfare of all birds. Thus, the LPF is moving ahead to make an effective contribution to the conservation of parrots in the wild state, and to try to ensure that the role of responsible aviculture in this regard can be enhanced.

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## OPERATION CHOUGH

by Richard M. Meyer

The Chough *Pyrrhonorax pyrrhonorax* is a star! This is not just my opinion but that of many other ornithologists, biologists, conservationists and aviculturists, including the late Susan Cowdy (doyen of Bardsey Island birds) who has recently been so tragically taken from us. I counted Susan a friend - even though I had met her only twice, at Chough conferences. She was one of the first and few conservationists to enthusiastically support our efforts to re-establish the Chough in Cornwall, in south-west England, partly through a captive breeding programme.

What follows is in part a summary of my PhD thesis - *The Feeding Ecology of the Red-billed Chough Pyrrhonorax pyrrhonorax in West Wales and the Feasibility of Re-establishment in Cornwall* - written at Glasgow University. I hope it might be useful to all those who are not prepared, reasonably enough, to tackle the original 100,000 words!

The original massive and rapid decline of the Chough in Britain was anthropogenic (begun by man). An east to west retraction had begun by the 19th century; there is a good correlation between longitude and dates of local extinctions. Persecution - direct and indirect - and a modernising post-Industrial Revolution agriculture, followed by rural depression (resulting in ever less coastal grazing), profoundly damaged the long-term survival of this always scarce and rather sedentary epigaeal invertebrate feeder.

Why did it disappear from England and not from Wales, Scotland, Ireland and Brittany on the French Atlantic coast? For a start, England has no agrarian island refuges combining sympathetic farming practises within a natural sanctuary. Islands provide the greatest length of multi-aspected coastline relative to landmass. The next best is a heavily indented remote coastline with abundant exposure aspects and headlands - such as is found in Ireland.

I approached the ecological feasibility of re-establishing the Chough in Cornwall from a dual perspective: 'What were the habitat factors which caused Choughs to disappear from Cornwall and not Wales?' and 'Do any significant differences still exist?'. In other words, could Cornwall support a viable population today if Choughs were 'miraculously' to reappear? One might ask the same question of Mauritius and the Dodo.

I spent a year assessing background habitats in west Wales and Cornwall (in all 200 1km squares of coastal and inland habitat including Chough or

ex-Chough habitat but also a lot which was not and never had been Chough habitat) field-by-field down to a resolution of a single pixel (20m sq), measuring and recording in full detail any feature that represented 20% of a pixel, including all botanical species, their distribution and height etc. Other landscape features recorded and categorised were physical topography, watercourses, hedges and boundaries. Historic change was examined via the Tithe maps of the 1840s, which were compared (crude as they were) to the present day mapping.

Essentially, the differences which were significant 150 years ago (as a result of local remoteness and agricultural practices) no longer exist. Yet West Wales is still able to support Choughs, albeit at a low level compared to farther north. And of course Wales still also has its island sanctuaries like Skomer, Ramsey and Bardsey.

So what do Choughs need? Although traditional extensive pastoral agriculture - combining rough-grazing, permanent and maritime grassland with arable elements in autumn and winter - is very important, approximately three-quarters of feeding time being spent on the cliffs (ranging from 57% at Cemaes, north Dyfed, to 94% in the south). Old/permanent grassland (of which of course there used to be far more) forms a transitional zone between the wild cliffs and modern agriculture. When included as *cliff complex*, usage rises to 85%. In the south, where there is very little if any old grassland, the proportion does not change, while at Cemaes - with an 'upland' agriculture - 'cliff' usage increases to 20%.

I first assumed this was due to the quality of the adjacent agriculture: i.e. more time was spent feeding on the 'better' farmland in the north. However, when I investigated foraging success, I found that not only did Choughs in the south spend more time feeding on the cliffs, they were also more successful there (in terms of time and effort expended per food item found) than on the 'good' agriculture farther north. This also correlates with better reproductive success in the south.

This is only explained if it is not agriculture quality which governs Chough habitat selection but *cliff quality*. To the south, the general aspect of the cliff-line is south-west, compared to north-west in the north. The exposure effect with a south-west aspect is greatly increased, with far less cliff scrub, and further improved where grazed slopes roll down to low vertical cliffs rather than where high rocky cliffs are thickly clothed by scrub.

So, a high-quality cliffscape is top of the list - its presence will compensate for a non-sympathetic agricultural hinterland. But where cliffs are less suitable, the adjacent agriculture becomes crucially important, and

relies much on extensive farming combining heavy rough-grazing and permanent pasture. 'Untidy' or eccentric farming (e.g. traditional farming) is particularly valuable.

But I was interested in a much finer analysis of habitat than these broad categories. For example, usage of bare earth was 28%. It is often said that Choughs require short-grazed maritime grassland, and yet usage of this habitat was only 5%. Short grass merely allows access to the substrate. Nearby vegetation is of course necessary to provide food for the invertebrate prey. The optimum habitat is pockets or zones of bare earth amongst a healthy and diverse vegetation.

An excellent example of such is where human pathways cut through natural vegetation on a cliff top. These are much used by Choughs in West Wales which, like Cornwall, has quite heavy tourist traffic. So, by identifying component structure, it is possible to enrich and finely tune habitats. And it cannot be assumed for example that tourism is necessarily damaging - something often claimed by opponents of Chough re-establishment. Human usage of cliffs is heavy for only a very small proportion of the day, during one brief season after breeding, and therefore, for very few hours of the year. At other times, wildlife has exclusive use of these pathways.

By live sampling, faecal analysis and observation, study of the Chough's diet revealed the year-round importance of beetles (in all their life stages) and, to a lesser extent, tipulid 'leatherjackets', and a seasonal dependence on other invertebrates, notably ants. As first suggested by Susan Cowdy, ants are the major factor in nest-site selection. Although large numbers are seen to be taken, their remains were never found in adult Chough faeces when there were young in the nest, proving exclusive selection for feeding to chicks - in the form of a bolus.

Another significant discovery was that earthworms and cereal grains are interchangeable as a source of winter bulk protein: Choughs take one or the other but rarely both. Cereal grain is probably preferentially selected due to lower collection costs (it is gleaned off the ground surface) but if unavailable, as in pastoral areas, earthworms are an important substitute.

In terms of prey-species diversity/abundance, land-use, and, given that sufficient habitat is available, I have few doubts that the Chough can be re-established in its ancestral haunts along the Cornish cliffs. One can never be sure of anything in life but providing no existing population is endangered, re-establishing lost species is truly, to use the term used by the NCC (Nature Conservancy Council) in its 1986 Corporate Plan, 'creative conservation'. Certainly no harm can come of the attempt.



A healthy viable population of Choughs in Cornwall would be good for Welsh Choughs and for the remnants surviving in Brittany for there would undoubtedly be some genetic exchange - as confirmed by the vagrants which still turn up in Cornwall (100km (62 miles) away across the Bristol Channel; Brittany is roughly as far away again from Cornwall). It is asking too much to expect enough Choughs from Wales to arrive in the same bit of Cornwall at the same time, but it would be nice if, when Welsh or even Irish wanderers did arrive in their English brotherland, they were greeted by a Chough speaking in a totally foreign accent.

To this end, a breeding programme is now underway which has the support of all registered keepers of Choughs in the UK. Like most corvids, Choughs are not easy to breed successfully in captivity, they have a complex social structure, varying from region to region. This needs to be understood better and related to the captive situation. Rearing from captive produced eggs is the only available option as a source of stock since it is not possible at present for various reasons to use the wild surplus which exists in parts of the Chough's very wide Palearctic range.

Providing *Operation Chough* can produce a viable founder population, the broad plans for release have been worked out. We have identified suitable sites in terms of quality and extent of habitat (historic nesting sites should still exist) under sympathetic ownership. With goodwill on all sides, Choughs can be re-established in England: the sort of goodwill displayed by The Rare and Endangered Birds Breeding Centre at Paradise Park, Hayle, Cornwall, when it offered to fund my research for three years.

It is still very unusual for 'zoos' to fund primary ecological fieldwork, but it is essential to understand a species' ecological needs and their availability before launching into a release programme. The vision shown by Mike Reynolds (Director at Paradise Park) in sponsoring my research should be applauded by all wildlife scientists who are seriously interested in creative conservation.

*Dr Richard Meyer was recently appointed Centre Co-ordinator and Animal Care Lecturer for Cannington College, at Paignton Zoo, Devon. His home address is:- Rosehill, High Street, Padstow, Cornwall PL28 8BB, England.*

## THE 'BIG' GROSBEAK

by Dr Michal Straka

The family of finches (Fringillidae) is a typical, species-rich, systematic unit of Passerine singing birds, characterised by a special, well-developed voice organ. The order Passeriformes comprises more than 5,100 species of which the finches are generally described as 'seed eaters' in worldwide ornithological and avicultural literature. These birds are considered one of the dominant groups which came into existence in the Miocene Period, about 20-30 million years ago, at a time when seed-forming plants were developing.

Some species quickly colonised much of Europe including the Siskin *Carduelis spinus* and Common Rosefinch *Carpodacus erythrinus*. Others live only in Eurasia, e.g. the White-winged Grosbeak *Mycerobas carnipes*, or within a small part of that territory, like the Japanese or Masked Hawfinch *Coccothraustes personatus*.



Dr Michal Straka

Male Caucasian Great Rosefinch *Carpodacus rubicilla*

The 'big' Grosbeak, actually the Caucasian Great Rosefinch *C. rubicilla*, is an Asian species which is available only rarely for our breeding programmes. There is no information in avicultural literature about its captive breeding. In the wild the species occupies a territory extending from the Caucasus, via the central Asian mountains, to the Altai, Himalayas and Tibet to eastern Nan-shan. It is a biotope occurring in the Alpine zone up to the perpetual level of snow. In winter it descends to the cover of thick vegetation. The nominate race *C. r. rubicilla*, is found only in the Caucasus. Another race, *C. r. kobdensis*, lives in the Alpine zone of the central Altai. Its plumage is red of approximately the same hue as the Caucasus race. The least intensively coloured of the races is *C. r. severtzovi*. The colour of the male's head, neck and breast is reddish-cinnamon, shading to a paler

pink on the back and tail. Light-coloured spots on the neck, head and breast are larger than in other races.

After the autumn change of 'overcoat', birds are deeper and richer in colour. In the spring the hue becomes lighter and more intense. In captivity *Carpodacus* species lose their intense crimson-red colouring very quickly, because the intensity of that colouring depends on consumption of the green parts of plants, as well as unripe fruits which contain a great amount of red pigments. Carotene, an artificial red colouring, is given to some species of *Carpodacus* (e.g. the Mexican House Finch *C. mexicanus*) which are bred more frequently in countries where breeding programmes have been established.

The grey and brown shades dominate the entire plumage; there are oval silver spots on the head, neck and breast. The lower part of the body is grey-white, and the wings and wing-coverts are grey-brown. The female is grey-brown with a slight pink tinge which usually disappears in captivity. Juvenile males have similar colouring until the first autumn moult.

I purchased a pair of *C. r. severtzovi* three years ago. The birds came from Kazakhstan. They do not nest there, only wintering in this locality - especially in the vicinity of Alma-Ata and the Aksu-Dchabagli reservation (Kovsar, 1988). According to their hue it was possible to establish that they belonged to the central Asian form of *severtzovi*. The birds were very shy and remained in the rear of the aviary which was covered in and sheltered from behind and both sides. The dimensions of the aviary were 4m x 1m x 2m high (13ft x 3ft 3in x 6ft 6in high). It was thickly overgrown with wild raspberry bushes and young maple saplings. Sunflower seeds and husked oats were the basic components of their diet. However, the birds pecked at the green parts of plants and bushes so that all vegetation was totally devastated during that summer. Of all the Asiatic species I have ever bred, these birds fed mostly on green vegetation and they destroyed plants as quickly as lovebirds do.

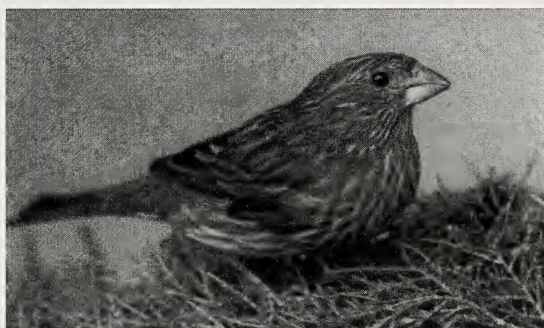
In addition to the sunflower seeds and husked oats, I also used to feed them on hemp and flax seeds for which they had keen appetites. Rape seed, millet and unhusked oats were eaten in small quantities. Every day they were supplied with an egg food enriched with various multi-vitamins and minerals. Once accustomed to this mixture they consumed it regularly and I believe it helped maintain the birds in good condition throughout the year. Whortleberries were a favourite item of food which I provided fresh, frozen and dried - I soaked them in water for 12 hours before feeding. Despite sufficient quantities of fresh and green foods, the male lost its deep red-crimson colouring very quickly (within three to four months). During the second year it got a slight red and pink tinge on its head and breast.

It is clear that these Alpine birds can be wintered in an outdoor aviary with an area at the back covered as described. Food is provided in this area. On the other hand, it was clear they did not like the hot seasons,



during which time they sheltered from the sun in thick, low-growing vegetation. During summer an outbreak of scabies was diagnosed; it was caused by *Cnemidocoptes* mites.

Only the Alpine and Siberian birds were disease-ridden. In addition to the Caucasian Great Rosefinch, only the White-winged Grosbeak and Pallas's Rosefinch *C. roseus* were affected. Hypothetically, we have to take into account several initiating factors. One may be the fact that Alpine and Siberian species are less resistant to some diseases because they do not occur in the climate zone of their country of origin. If they are bred in captivity under warmer conditions, common infections would cause serious health problems due to their weak immunity. In addition, the Alpine and Siberian air is cleaner and does not harbour as many infectious particulates as that in milder zones.



*Dr Michal Sraka*

**Female Caucasian Great Rosefinch *Carpodacus rubicilla***

At the end of March the male began to sing from a high vantage point in the aviary. A quiet, melodious chatter was interspersed with short whistles. In spite of the fact that the birds were in good condition for breeding, they did not mate, nor did they build a nest during two breeding seasons. At the end of the second summer the female fell ill with scabies. After medication with Skabicid the disease did not occur clinically. However, the entire body was probably affected because the bird continued to languish up to total cachexia. The male died a year later with similar symptoms after repeated treatment with Skabicid, Neguvon and Tylan.

The breeding of *C. r. severtzovi* in captivity has not been researched yet. Only a few individual birds have ever been imported and therefore their reproduction in captivity must be extremely rare. We expect better contacts with breeders in the countries of origin of this race in the future and hope this may lead to more frequent importations of these birds.

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## BIRDS IN A DURBAN GARDEN

by L. Gibson

These notes are about the birds and plants (and some other creatures) in our large garden in Durban, Natal, South Africa. Our lasting impression of Durban was of the year-round plethora of flowering shrubs and trees and these contributed in no small way to the variety of birds and butterflies on the property. The limiting factor to the plant life, and therefore to some extent the bird life, was salt spray, for we were just a short distance from the beach.

The property was situated at the highest point of a seaside ridge and the tallest things visible from downtown, were our two large Norfolk Island Pines *Araucaria heterophylla*. To the front was the sea, while the back overlooked a small valley. When the Brazilian *Tibouchina* was flowering, the sea of purple and pink which covered the far slope of the valley created an unforgettable view. At the bottom of the valley was a wild, bush-covered park. Later, a golf course was built on half of it but it remained ecologically friendly.

The lot was enclosed at the front and back by walls, bordered with *Hydrangeas* on the street, or seaside, and by a line of heavily-berried Pepper Trees *Schinus molle* on the inland side. Both ends were demarcated by a thick Brazilian Cherry *Eugenia uniflora* hedge. Half of the area was left completely uncultivated, with paths mowed through the long grass. The front bore the brunt of the salt-laden, southerly gales, but the downhill side at the back was more sheltered, creating several distinct micro-climatic areas.

Numerous trees, included the aforementioned Norfolk Island Pines, date palms - with fruits edible only to birds - mulberries, guavas, papayas (pawpaws), two very large flame of the forest *Erythrina* spp. and an 18ft (5.5m) *Ficus elastica* - the potted Rubber Plant of more miserable climes. There were also several wild or accidental trees, such as the 'lucky bean' with its decorative but poisonous black and red seeds, as well as a fair-sized strangler fig. A Natal Plum *Carissa grandiflora* provided tasty fruit as well as an impenetrable thorny haven for nesting birds.

Flowering shrubs and plants abounded. Notable were large coastal aloes, said to grow only within the salt spray, a clump of giant *Strelitzia* and thick stands of ginger with very tropical-looking flowers. Frangipanis *Plumeria*, *Oleanders* and 10ft (3m) Poinsettias added further colour and there were numerous vines, including edible passion fruit. Banana plants were liberally sprinkled around but their roots were invariably eaten through by Mole

Rats, causing the plants to crash over if anyone leaned against them. All these, yet the salt spray limited the number of species which could be grown there!

On moving in, the first birds we saw were the human-tolerant residents. The most obvious was a pair of Indian Mynas *Acridotheres tristis*. These are a widespread introduced nuisance, just as they are in Hawaii. They also have a foothold on Madagascar and are found on other islands between Africa and India. They did, however, keep sparrows away from the garden. The mynas came down, along with a few other birds, every time bread was put out, which was quite often, as we found it coarse and barely palatable because it contained a high percentage of maize flour.

The male myna was easily recognised on account of its noticeably darker head and bigger wattles. The pair foraged solely in the garden and included in their territory the strip of *Hydrangeas* between the wall and the roadway. They nested in a hole above an upstairs window of the stone-built house and usually raised two broods a year. Although they laid four or five eggs, they seldom succeeded in raising all of the chicks to maturity. Often, one of the brood would be limping because of rickets and during one particularly dry year, only a solitary chick survived. Because of the relentless drought (we arrived midway through a ten year one) insects were not always plentiful so, in spite of objections on ecological grounds, we fed the adults on bread every day one season and they produced four broods and a total of 15 young fledged.

Every summer the newspapers contained stories of 'vicious' mynas dive-bombing children who passed too close to the nest - just as they published tales of 'vicious' Vervet Monkeys threatening players on the local golf course.

The mynas earned our grudging admiration as they swaggered around in charge of their territory and chased away larger doves. Our back door was always left open, and they became so bold that they took to coming in to raid the dog's dish and sometimes flew right into the kitchen. We went off them when, on one of these kitchen forays, on the way out they snatched up our daughter's pet Dwarf Chameleon and fed it to their chicks. A Death's Head Hawkmoth, a bat with a 1ft (30cm) wingspan and snakes were among other creatures which came in through the back door.

Other obvious garden residents were the doves. Every morning we were awakened by the pleasant 'cooing' of a pair of doves calling from their warming perch in the Rubber Tree. In the summer, this unfortunately meant a 4.15am reveille, for no one in South Africa had the wit to introduce daylight saving time. The doves were among the five species that vied for the bread hand-outs and they all became relatively tamer so much so that the dog, whose hobby was chasing things, often came close to catching them.



Two pairs of the large Red-eyed Doves *Streptopelia semitorquata* nested in the heavily-spiked date palms at opposite ends of the garden. When coming and going from the nest, they made a 'meow' so like that of a cat, that it was a long time before we found that it emanated from the doves. In the breeding season, the males developed a powder blue patch on the back of the head and neck, one bird being particularly brightly marked.

A pair of the smaller Laughing Doves *S. senegalensis* held the ground between the two pairs of Red-eyed Doves. They all bred at any time of the year but especially during the winter. Both species built only in spiky plants, *S. senegalensis* using thorny *Bougainvillea*, sparsely-spined lemon or the unassailable Natal Plum. The nests were the usual flimsy collection of twigs, yet unlike some others, they were never blown down. On these rimless platforms, the plump squabs were sitting targets for Boomslangs, the local highly poisonous tree snakes, the males of which are green and the females brown.

Although normally vegetarian, both species of doves ate 'white ants' (termites). The opportunity to do so arose four or five times a year, during the amazing termite irruptions. In spite of the tirelessly repeated statement that these insects only swarm after rain, the local termites did so day or night, without regard to the weather or season. In areas of perhaps half a square mile (1.30km sq), millions would simultaneously emerge from the ground. When this happened during the day, birds and lizards threw caution to the wind and settled on roadways to gorge themselves on them, and the doves were always present at these feasts. As cars were usually unable to pass by while the termites were flying, the roadway diners were never in too much danger. When the swarms emerged and flew round the street lamps in the evenings, large bats replaced the birds and big toads took the place of the lizards. One night thousands of termites came up inside the aviary and the birds ate so many that they could barely get off the ground for the next week. The termite swarms are a boon to aviculturists, for a bucket can be filled in a minute or so, and the contents frozen and used later.

More retiring, but seen at feeding time, was the resident pair of Black-eyed Bulbuls *Pycnonotus barbatus*. One always kept watch while the other hopped clumsily on its short legs to the food hand-out. When they were not feeding on bread crumbs, they could be seen gorging themselves on the little dates, with the improbably large stones. Or, they could be seen desperately trying, unsuccessfully, to swallow the Brazilian cherries, which were too large for them to swallow whole, or eating large numbers of unripe, spiny Castor Oil *Ricinus communis* berries, blissfully unaware of castor oil's reputation! Bulbuls were the only birds to eat these.

The Black-eyed Bulbuls usually raised their brood of two chicks in the Pepper Trees, probably because the small red berries were a convenient

source of food, as were the *Lantana* berries below. The broods were always successful, save for the odd loss to a tree snake. The old nests of not very securely anchored fine grasses, were always blown out of the trees when the gales came. This bulbul has a rather miserable, limited call of three or four notes.

The fifth species to come for the bread was that accursed, cosmopolitan nest-pirate, the common House Sparrow *Passer domesticus* - enough said!

The above were year-round residents, whereas a number of others came to nest in the garden, some doing so regularly. Prominent among the latter was a pair of weavers, either *Ploceus velatus* or *P. cucullatus*, which in spite of usually being colonial nesters, returned every year to nest by themselves in the same palm by the kitchen door. This triple-trunked tree with wicked 4in (10cm) spines, was shared with one of the pairs of Red-eyed Doves. Many of the palm fronds collapsed while still green and had obviously been eaten through. One day, when standing beside the tree, we heard chewing sounds and on digging into the stem with a screwdriver, found a number of huge Rhinoceros Beetles.

The male weaver always built several nests and slept in one of them. A more substantial nest was made for raising a family, one with a 6in (15cm) long, loosely woven, downward pointing tube, with the nest chamber at the top. Construction was of fine, 12-18in (30-46cm) long strips, neatly peeled from the edge of a palm leaf and hung from the tip of a frond by a few knotted strands. The nest chamber was lined with down and grasses but the tube was unlined. All the nests lasted until the fronds fell (which they did annually) and until this happened, it looked as if there was a small colony of weavers present.

The kitchen was on the first floor at the back of the house, on a level with the top of the palm, and the birds could be seen entering the nest. This was done by flying quite fast towards it, then turning upwards. At the last split second, the wings were folded and the feet drawn up, and the momentum usually carried the bird to the top of the tube.

When displaying to his mate, the black and yellow male hung upside down beneath a nest and flapped his wings. Apart from a buzzing call at this time, the pair was quiet, in great contrast to the very noisy weaver colonies in the area. After breeding, the male lost his black and yellow plumage and the pair hung about with some companions, but were never away from the garden for long.

In the late winter or early spring (there was not much difference between the two) the leafless *Erythrina* trees burst into flower. Their spectacular large scarlet blossoms attracted many birds which gathered to partake of the nectar. There were the bulbuls and, rather surprisingly, also the mynas and occasionally the doves. The most regular feeders were the sunbirds - and the weavers!

The garden was the centre of the very large territory needed to provide fruit for a family of six to ten Speckled Mousebirds *Colius striatus*. They were plain, dull brown, with no speckling. The much-repeated suggestion that the name mousebird comes from the fact that these birds 'creep around like mice' is, in my opinion, ludicrous, for neither of these creatures creep.

There was an annual race between us and the birds to harvest the exquisite Natal plums. Every day they would peck a test hole to check if a fruit was ripe, so usually we had to content ourselves with half-eaten, though still delicious fruits. The birds also competed with Vervet Monkeys for bananas, guavas and papayas. While the monkeys struggled unsuccessfully to carry off large ripe papayas, throwing sprigs to distract our enraged dogs, the mousebirds sat calmly on the fruits, in all sorts of gymnastic positions and gorged themselves. The monkeys always came back later to carry away the papayas once the birds had reduced them to more manageable sizes.

The mousebirds also ate the Pepper Tree berries but never ate anything very hard, unless one includes the dates, which they swallowed whole, stones and all. They ignored the cherry tomatoes which grew in wild profusion, leaving the monkeys to make off with the unwanted produce. The Brazilian cherry (which has no connection with our northern cherries) has an astringent quality and, like the Natal plum, can be eaten only when it is fully ripe. It is an acquired taste to which we became addicted. This fruit also appealed to the mousebirds which ate large quantities of it. As a single small tree held about 6,000 cherries though, the loss was not noticeable. Another favourite was the *Lantana* berry. This introduced pest ran riot on every piece of unused ground and a large patch grew just over the back wall and provided a bonanza for many birds. As the greater part of the mousebird's diet was made up of introduced plants, we wondered what they used to eat before these were brought to South Africa. When fruit was out of season, a year-round staple was papaya leaves. In captivity, mousebirds in Canada ate large quantities of *Weigela* leaves. When we tasted papaya leaves, we found that they have an awful, bitter taster just like the *Weigela*.

The habits of the wild Speckled Mousebird are virtually identical to those noted for the Blue-naped Mousebird *C. macrourus* living in aviaries. Like the latter, they are silent, save for an alarm call. Sand-bathers, they were only once seen to make use of water. After some flowers were watered, they spread their wings and wiggled about on the wet flowers and leaves. Oddly, this behaviour was also recorded only once in the aviary.

The Speckled Mousebirds nested in the Natal Plum and sometimes in the 'cherry' hedge or the Pepper Trees, where their ten day incubation period did not prevent predation by Boomslangs. No doubt tree snakes had



an influence in the development of this short incubation period, just as their presence must have pressured mousebird chicks to leave the nest well before fledging and clamber about among the foliage. The mousebirds, along with the Laughing Doves, seemed to suffer most from predation by Boomslangs. Though this may simply have been because their nests could easily be seen from the kitchen windows and their predation was therefore more easily witnessed. These pencil-slim reptiles could glide through the hedge with remarkable speed and grace and though thorns did not seem to bother them, the nests in the spiky Natal Plum bush were less troubled than others. The mousebird chicks' habit of leaving the nest prematurely, meant that they often had to be rescued, and it was not uncommon for Speckled Mousebirds to be kept as pets.

The dull, greenish-grey Cape White-eyes *Zosterops pallidus* were near-permanent residents. A pair always nested among the lower branches of one of the Norfolk Island Pines. Like the mousebirds (and as noted in the aviary), the chicks invariably left the nest several days before they could fly. This often resulted in them being caught and kept by children as 'pets'. However, unlike the frugivorous mousebird chicks, the insectivorous *Zosterops* chicks soon died.

When, during the breeding season, a path was being cut in the grass below the pines, the parents' alarmed whistles caused the landscape to explode with chicks fluttering in the air, then disappearing out of sight again, at which point the mowing was stopped. The white-eyes sometimes pecked small holes in the fruit to sup the juice but could scarcely penetrate deep enough to do any real harm and preferred to feed where the fruit had already been damaged by the *Colius*. Otherwise, they ate quantities of *Lantana* berries and, of course, insects. Their flimsy, cobweb-bound nests were always the first to be blown out of the trees.

Incorporating our grounds in its large territory was the Black-collared Barbet *Lybius torquatus*. The dual calling of these attractive red-faced barbets is a well-known sound. The loud call is started by the male and finished by the female. However, we are sure we heard a single male, which had lost its mate, make both calls - perhaps the only time this has been noted! They always called from a concealed position and stopped if they thought they were being watched. They use a most unbirdlike little growl to communicate at close quarters. Their saw-toothed bill is used like a can-opener to tackle tough fruit rind etc.

Nest-boxes were put up all over the place, but the only occupants ever seen were an occasional surprised little snake and geckoes. Ignoring the boxes like the rest of the birds, the Black-collared Barbets enlarged a rotten area in a small avocado tree. It never fruited because of the salt-laden air, while others produced fruit just a short distance inland. The entrance tunnel to the nest was 1¾in (4.5cm) in diameter and 1¾in (4.5cm) long. Half of

this length projected as a lip above the chamber, which was pouch-shaped, 8¼in (21cm) deep below the lip, with an average width of 3¼in (8cm). The width was governed by the fact that the nest was in a limb barely 4¼in (11cm) across. The nest chamber came to a rather abrupt, natural point, filled to a depth of 1in (2.5cm) with rotten wood dust. Three white eggs were laid and the chicks were fed mostly on large insects, gathered from the foliage of nearby trees by the parents, who hunted together and kept in constant contact with each other. These shy birds were never seen to forage on the ground and they never left or entered the nest if they suspected anyone was in the vicinity.

### Occasional Nesters

One summer, the drought broke, though only temporarily, as usual. The grass immediately sprouted and reached 3ft (92cm) tall and there was a heavy crop of seeds. There was a corresponding influx of seedeaters into the area, one of which was the Common Waxbill *Estrilda astrild*. This little bird built in the grass at the foot of a small guava tree, in the unmown part of the garden. The grapefruit-sized, tightly constructed nest had a complex, closed entrance of interlocking grass stems. This was situated at the top and resembled the tuft of fibre on the end of a coconut. If disturbed, the female exploded out through this, pushing the stems apart as she went. They immediately closed behind her and it was a mystery how she managed to get back in, for the stems would not part, unless pulled open.

On the side of the nest, near the top, was a little opening, leading to a tiny chamber - a so-called cock's nest. But the male was never seen in this, no matter how often it was examined, in fact, the male was never seen at all. The entrance to the main nest could even have been via this side chamber, through a reverse grass-lock. The complicated entrance was likely an anti-snake strategy, with the dead-end side entrance perhaps a further attempt to frustrate these reptiles.

The six eggs all hatched and the chicks soon filled their private little nest chamber until eventually only two would be uppermost at any given time. Maybe at this stage the female slept in the annex. Anyway, the system worked, for none of the chicks were smothered and all fledged successfully.

Several species of sunbirds were frequent visitors, especially to the winter-flowering, long-tubed, red aloe flowers. Juvenile sunbirds spent all winter in the garden. Most days, one of these streaked, greenish birds could be seen hunting assiduously for spiders along the lower branches of a Norfolk Island Pine. They proved impossible to identify and always disappeared before getting their adult colouring.

As spring approached, the young males began to make courtship flights. They rose from a pine branch and with their beaks pointing skyward, spiralled up for ten to 15ft (3m-4.6m), before stalling and returning to the same perch. We were never sure whether this was just for practise, or if one of the watching, identically garbed birds was a female.

Once only, a Black (or Amethyst) Sunbird *Nectarinia amethystina* came to nest. It made three attempts to hang its pendulous home from the bottom branch of one of the *Araucarias*. The unpredictable southerly gales - up to 90mph (145 km per hour) on occasions - were the reason for sunbirds not breeding in the garden, for their hanging nests needed a sheltered environment. Three times the nest was blown down, before the bird 'wisened-up' and built it at the back of the aviary.

The 18in (46cm) long structure hung by only two or three slender grasses which were interwoven with others to hold the tiny globule nest, suspended 1ft (30cm) below. The delicate little nest chamber was made from plant down, bound with cobwebs. It had a side entrance with the merest entrance platform and tiny awning. Grasses hung underneath and tapered off in a mirror image of the top. The whole structure swayed wildly in the slightest breeze but the female remained unperturbed and continued to sit tight.

The intricate nest was only 5ft (1.5m) above the ground but the female refused to be flushed, so that the proceedings could be monitored more easily. The two white eggs soon produced two chicks. These were fed on very small soft-bodied insects, mostly spiders, and nectar. The female, a single parent, endlessly brought food, regardless of our presence and the young fledged without trouble.

The *Lantana*, although over the back wall, was still on our property. The ground fell away steeply there so the wall was built on the top of the bank, rather than on the property line at the foot. This sheltered bank was covered with rocks as an anti-erosion measure and was consequently home to skinks, geckoes, snakes and small birds.

A neat globular nest appeared one day, only 1ft 6in (46cm) up in the *Lantana* tangle, below the Pepper Trees. The outside was made of fresh leaves and it blended in well with the weeds and creepers. A small entrance was situated near the top, unfortunately facing downhill, which meant it could not be observed easily. So well camouflaged was it that it was a wonder that it could be seen at all. The builder proved to be a Tawny-flanked *Prinia* *Prinia subflava*. This long-tailed, greenish yellow, warbler-like bird has a wide distribution stretching from Africa to south-east Asia. It is very secretive and its rapid, loud 'buzz' was often heard while it remained unseen. Because of this and the inaccessibility of the nest, nothing further was noted other than the fact that the chicks, in spite of living immediately below a tree snake route, were safe in the enclosed nest and all got away.



The non-nesting species could be divided into local and seasonal residents and rare visitors. Every winter, a holiday-making pair of Fork-tailed Drongos *Dicrurus adsimilis* showed up. These handsome, streamlined, jet black birds entertained us with their flying displays. They would soar to a great height, then come rushing downwards in a steep dive, only to pull out just before hitting the ground. These air show aerobatics were not just confined to the breeding season as sometimes thought - the birds performed them out of *joie-de-vivre*. The 'F16s' of the bird world, they were such confident fliers that they chased crows for fun, striking these considerably larger birds on their heads and backs, until the marauders took the hint and left the area.

The attraction was our beehive which the drongos perched above and picked-off 12-15 incoming bees per meal. It is likely that the drongos knew that homing bees carried honey. That these were 'African killer bees' did not bother them and the number they took made no discernible dent in the 6,000-7,000 strong hive. The bees were wonderful honey producers, which continued to work during rain showers, moderate winds and even on glorious moonlit African nights. However, they had disconcerting habits - noises annoyed them, as did just about everything else. Anything black drove these belligerent little insects into a fury. Our black Doberman cross bitch soon learned to avoid the area around the hive altogether after she had been pursued into the house, yelping and covered with angry bees, while our fawn Bullmastiff was ignored.

Not only were the drongos the sole exception to their colour prejudice but they managed to instil a fear into the occupants of the hive which nothing else could. When they were hunting, the hive was quiescent. The bees inside would not fly out, while those which were out tried to sneak back as unobtrusively as possible, with many electing to sit quietly on nearby vegetation, waiting for the danger to pass. How the bees knew about the drongos was a mystery and if anyone needs a subject for a doctoral thesis, here it is.

Every winter, bee-eaters turned-up in the local park. Each would sit on an exposed branch overlooking open ground where it could see, pursue and capture its prey, then glide effortlessly back to knock the insect senseless on the same perch from which the bird had taken off. It was amazing the distance at which hapless flying insects were spotted and the pursuit never failed. Occasionally, a Little Bee-eater *Merops pusillus* - a winged 'work of art', and even more streamlined than the drongo - would show up on our back wall. After a quick snack it would leave, for in spite of the bees, the area was not open enough for it.

A lone male Natal Robin (or Red-capped Robin-Chat) *Cossypha natalensis* arrived every winter, and was almost certainly always the same bird. As is often the case, its subdued but matching attire of slaty blue and

burnt orange was more attractive than a gaudy jumble of clashing colours. Its seasonal arrival was odd, for resident Natal Robins lived in a patch of woods just over a mile (1½ km) away, so it probably came from inland. *C. natalensis* always delivers its excellent song from thick cover. It is a contender for the title of our favourite African species, as we like robins/thrushes because of their singing ability and general manner, and it was the only one of the robins ever to visit us.

The last of the winter birds was a once-only (Red-shouldered) Glossy Starling *Lamprolornis nitens*. This is one of the very few birds which we saw in our garden that was already familiar to us before we arrived in Africa. Not from the immediate area, this species became increasingly common 50 miles (80 km) inland in the dry uplands. A typical starling in habits, with eyes the colour of old piano keys, this one spent two days poking around a cavity in a big flame of the forest tree. Finding the hole already occupied by a bush baby, it soon moved on. A Klaas's Cuckoo *Chrysococcyx klaas* with a heavily barred white front and with a green back with orange spots, stopped by in the summer, but never called, foraged, or showed up with a mate.

A pair of Yellow-billed or Black Kites *Milvus migrans* patrolled the valley each summer. Several times a week one of them sailed serenely over the property on motionless wings, steering delicately with its long forked tail. It never landed and did not even slow down to examine the carrion left to tempt it, so what it ate remained a mystery to us. Small birds were never troubled by its presence.

A conspicuous Brown-hooded Kingfisher *Halcyon albiventris* often came to hunt, sitting every time on the same exposed branch of a pine, from where it sallied forth to catch skinks and geckoes. This dingy-looking, 10 in (25.5 cm) long species, like all kingfishers, seemed much bigger because of its huge head and bill. It is often found far from water and lives on reptiles, locusts and other such prey.

On a nearby house lot, a bulldozer cut away part of a bank to level the site and left a sandy, vertical face and, within two days, two pairs of 5 in (13 cm) long Malachite Kingfishers *Alcedo cristata* began to tunnel into it. Although there was a small stream in the park with hundreds of released guppies, the two pairs did nearly all of their hunting in adjacent gardens. This species is normally very retiring and keeps to dark, thick cover, Peering into our dense Natal Silverleaf bush, the only indication of the bird's presence was the flash of its coral-red bill - about two-fifths the length of the body - as it disappeared.

Yet another consumer of lizards (it was tough being a lizard on our property) was the handsome, white-breasted, black-backed Fiscal Shrike *Lanius collaris*, so-called because magistrates wore white shirts and black

cloaks. The male shrike would sit on the gable of the house and whistle its loud, pleasant song for 20 minutes at a time. Never shy, it came down while we sat in the garden and, using its heavy, wickedly-hooked bill, snatched-up skinks and grasshoppers. Oddly, in spite of the fact that it was with us most of the time, we never saw a mate. Perhaps it nested in a nearby garden.

Even shyer and more unobtrusive than the Black-collared Barbet was the Red-fronted Tinker Barbet (or Tinkerbird) *Pogoniulus pusillus*. Commonly heard but rarely seen, and then only as a flash of yellow among the high branches, the persistent 'tonk, tonk' of this bird was one of the sounds of the summer. This wary black and yellow bird (with a red forehead) merged with the sun-dappled foliage and could easily have nested in or around the property without being spotted.

Once, at the far end of the garden, a little bleat was heard coming from a dense bush. It sounded all the world like a goat kid, but investigation proved the maker of the sound to be a bird. It was some time before we knew that the Bleating Warbler *Camaroptera brachyura* was there at all. This drab little bird, cocked its short tail like a wren and was so shy we never saw it outside of its beloved bushes.

The largest species to actually land in the garden was the Hadedda Ibis *Bostrychia hagedash*. Its long, curved, red-lined bill was just right for probing, backwards between its legs, down the sloping cricket burrows. They were about half the length of the ibis's bill and the heavy, slow-moving crickets were easily extracted. All facing the same direction like sheep, the ibis would move forward in a tight group, scouring the ground for the crickets. The Hadedda has adapted well to the intrusion of people and forages on open ground, such as sports fields, in the suburbs. They remain extremely wary though, and if watched for too long, even from a distance, will take off, uttering their harsh cries as they do so. These woodland ibis roosted in the nearby park where they were always being disturbed in the middle of the night, probably by a mongoose. The Hadedda (with the accent on the 'ha') is one of the few birds to clearly utter its name and we would be awakened by their raucous cries 'ha ha, ha dee da', followed by a few sleepy 'ha ha's', as the birds settled again.

All our small birds were thrown into a panic by crows, unless that is the drongos were present. We were occasionally visited by the Pied Crow *Corvus albus*. Black, with a white collar and breast, it seemed to be an accident prone species, for about 15 could be seen at any one time at the local Center for the Rescue of Wildlife (CROW). Maybe because they are so big (20in (50cm) long), they are found more easily. One such bird, with an irreparably broken wing, was given to us by a well-meaning worker at the center. We took it reluctantly and set it on a hurriedly constructed feeding platform in



a lucky bean tree. The bird remained both wary and belligerent, ungratefully stabbing the hand that fed it, and its incessant 'cawing' had a depressing effect on the surrounding birdlife. After a week, this constant uproar attracted two other Pied Crows which 'cawed' encouragingly enough for the invalid to leap from the tree and hedge-hop away. By the time it was traced the following day, the kindly lady in whose garden it had stopped had already rushed off with it to CROW. Nobody at the center recognised the former inmate and, needless to say, we never said a word.

One Sunday morning we were awakened by a haunting call of seven or eight loud, slow, deliberate notes, delivered on a descending scale and repeated over and over again. Looking out of the window, we beheld a magical sight. The whole valley was blanketed by a white mist. Only the garden was free of mist and the house had become a lonely ship on a becalmed sea. The sole sound that eerily quiet morning was made by a 'rain bird', aptly named because it becomes vocal after rain. The latter was so infrequent that we had never heard the bird before, although it had been spotted once in the park. The mist had given it the courage to leave its familiar dense cover and travel round the gardens. Burchell's Coucal *Centropus superciliosus*, to give it its more prosaic name, suddenly appeared from over the wall and began to toy with a piece of paper. This gave us a rare chance to observe this evasive bird, which measures 17½in (44cm) and has a white throat, rufous back, barred rump, long tail and, above all, a heavy, curved bill and fiery red eyes, contriving to make it look like a cross between a hawk and a pheasant. When it tired of playing with the paper, it slipped silently into the mist and was neither heard nor seen again.

Our last local bird, but one which passed so high overhead that it barely qualified, was the White Pelican *Pelecanus onocrotalus*. A small colony lived on a large pond about two miles (3km) away. Nearly every day, a flock of six to eight flew by on their way to fish in an estuary about 25 miles (40km) up the coast. In spite of looking top-heavy with a bill half the length of their body, these pelicans were wonderfully elegant in the air.

## **Pet birds**

Birds in this category were surprisingly common, with the easy living in the area contributing to their survival. The calling of a neighbour's Cockatiels attracted a multitude of others of every imaginable mutation. Where were they coming from? About three miles (5km) away there was a vegetable oil factory. There they pressed peanuts for the oil and left a huge pile of crushed nuts lying outside. This attracted hordes of pigeons and anything between 20 and 40 Cockatiels each day, along with other birds, including a few parrots. In spite of such large numbers, there were never any reports of Cockatiels nesting in the wild. Probably their commercial

value meant that they did not remain free for long enough. Once we found a young boy hanging precariously some 12-13ft (3.7-4m) up in a Norfolk Island Pine, with a white Cockatiel keeping one branch ahead of him.

Two African Grey Parrots *Psittacus erithacus* showed up at different times, each spending two days in the garden. Both were very wary and sat on top of a baited cage but refused to enter it - one of them shouted abuse at us in Afrikaans. They were remarkably fit and took off flying high, fast and direct. We had more luck catching Budgerigars. These trusting birds invariably entered cages, or sat on our hand. They were not strong fliers and never travelled very far. Usually they were claimed by distraught little girls. Much stronger on the wing were the Peach-faced Lovebirds *Agapornis roseicollis*. Nearly all of them were fairly tame yet nobody ever claimed them, probably because they flew fast and far. The result was that we often had a colony of up to six living in the big *Erythrina* tree, with some leaving only to be replaced by newcomers. This species, called the Rosy-faced Lovebird in South Africa, is found wild in Namibia, on the other side of the continent.

Our own pet bird was a broody Silky hen. Just two weeks after we got it, the bird was found to be crawling with mites. These were quickly removed by submerging the bird in a basin of very hot water, with only the tip of its bill being held clear. Much relaxed after this, it was given two newly hatched chicks to care for and strutted around proudly, fussing over its instant family and bending seeding grasses down for them - the first we knew that hens did this. Unfortunately, only two weeks earlier we had rescued the tall, skinny and still starving young Doberman from the pound. She quickly gave in to temptation and we came home one day to find her eating the Silky, while the hen's hysterical chicks ran up and down outside the driveway gate.

\* \* \*

## RATITE SYMPOSIUM

The Association of British Wild Animal Keepers (ABWAK) in conjunction with the Ratite TAG are to hold a Ratite Symposium at Chester Zoo on 26th April 1997.

The papers will cover various aspects of husbandry and other issues concerning Ratites in captivity. There is a special concessionary rate for representatives from Federation/TAG collections.

For more information please send SAE to:-  
Michael Woolham, Cotswold Wildlife Park, Burford, Oxon OX18 4JH.

## THE SOCIETY'S VISIT TO CHESTER ZOO

by Stewart Pyper

On Saturday 13th July the Avicultural Society visited Chester Zoo for the first time since 1967. The Curator of Birds, Dr Roger Wilkinson, who members know from his articles in the *Avicultural Magazine*, arranged the invitation which the Society was most grateful to accept. The weather was dry with the temperature rising after lunch.

The collection of birds at Chester is probably the most extensive of any zoo or bird garden in this country. Certainly its breeding successes in recent years have no equal. Chester Zoo has at present a total of 26 Avicultural Society Certificates of Merit for UK first breedings. As is expected nowadays conservation is very important and Chester participates in a great number of breeding programmes.

There is a varied collection of cranes. Two pairs which particularly caught my attention were the Wattled and Black-necked Crowned Cranes. The latter allowed close observation and I thought their charcoal black feathering very attractive. More pelicans were expected shortly, although part of their enclosure has been lost to the new monkey house. Owls are well represented in the collection and we saw young Spectacled and Snowy Owls. In some of the owl enclosures it seemed strange to see red hot poker growing. A pair of Mauritius Kestrels have a spacious flight to themselves.

Roger is very proud of the 'Europe on the Edge' aviary which covers some 2,000sq m (21,500 sq ft) and contains species, such as, European Black Vultures, Waldrapp Ibis and White-headed Ducks.

Parrots have for many years been a speciality at Chester Zoo and good breeding results have been achieved. Among the species we saw were Blue-throated Conures, Derbyan Parrakeets, Greater Vases, Blue-throated Macaws, Green-cheeked Amazons, Blue-eyed Cockatoos, Musschenbroek's and Duyvenbode's Lories, and White-tailed Black Cockatoos. Humboldt Penguins have bred well but there is concern that too many collections now have only stock related to that at Chester.

While walking around one realises how spacious Chester Zoo is - it covers over 100 acres (40ha). There is a monorail for those who wish to use it and enjoy an alternative view of the zoo.

From a personal point of view I found the softbills quite outstanding. We viewed perhaps the only pair of Blue-winged Kookaburras in the country and mudded-in Wrinkled Hornbills within a few days of leaving the nest. At least two young had been seen at the entrance. Chester achieved the first UK breeding with this species in 1995. A Royal or Golden-breasted Starling had been reared and Shamas and Plumbeous Redstarts had also bred successfully. A pair of Lilac-breasted Rollers presented by our member,



Dr Martin Bourne, had nested successfully and we saw four independent youngsters. However, the male had killed his partner during the rearing and had therefore to complete the task on his own. Roulroul Partridges, Luzon Bleeding Heart Doves, Lesser Green Broadbills and Channel-billed Toucans were all in perfect condition.

Roger is disappointed that neither the Great Indian or Rhinoceros Hornbills have reproduced - each has a spacious compartment of their own. The female Great Indian has been muddled-in and Roger believes there have been chicks. The female's bill is rather rounded at the tip so perhaps she has problems feeding the chicks properly! A pair of Ferruginous Pygmy Owls, despite being in a darkened flight, have been a disappointment, as only infertile eggs have been laid. Finally, as I was leaving, I was shown some off-show rearing pens housing Satyr Tragopans, some parent-reared and some which had been hand-reared which were awaiting departure to other collections.

\* \* \*

A **Council Meeting** was held on Saturday, 21st September 1996, at Flamingo Gardens and Zoological Park, Weston Underwood, Nr. Olney, Bucks.

The following members were present:

Miss R. Ezra (President), K. W. Dolton, Prof. J. R. Hodges and R. C. J. Sawyer (Vice-Presidents), G. R. Greed (Hon. Secretary/Treasurer), K. J. Lawrence (Chairman), J. Blossom, M. Curzon, R. Grantham, N. Hewston, R. E. Oxley, S. Pyper, J. Trollope, R. Wilkinson and Ms R. Wiseman,

Miss R. Ezra was re-elected as President for a further period of five years. C. J. S. Marler was elected a Vice-President and Prof. J. R. Hodges and R. C. J. Sawyer were re-elected as Vice-Presidents for a further five to eight years. M. Curzon, R. Grantham and S. Pyper were re-elected to the Council for a further five years. J. Blossom resigned from the Council and P. Schofield and S. Tonge were elected Council Members.

The Society's Medal for the first UK breeding was awarded to:

M. & N. Curzon      Yellow-fronted Tinkerbird *Pogoniulus chrysoconus*

The Society's Certificate of Merit for the first UK breeding was awarded to:

Tropical Bird Gardens, Rode,	Red-tailed Amazon <i>Amazona brasiliensis</i>
Chester Zoo,	Wrinkled Hornbill <i>Aceros corrugatus</i>
Birdworld, Farnham,	Black-crested Guineafowl <i>G. pucherani edouardi</i>
Birdworld, Farnham,	Mountain Peacock Pheasant <i>P. inopinatum</i>
Birdworld, Farnham,	Fulvous-breasted Woodpecker <i>Picoides macei</i>
London Zoo,	Black-backed Fruit Dove <i>Ptilinopus cincta</i> .

The D. H. S. Risdon Award for the 'Best article to appear in the *Avicultural Magazine* during 1995, was awarded to Robin Restall for his article titled, Observations of Unusual Behaviour in Munias, Genus *Lonchura*, Vol.101, No.2: 63 - 74.

## NEWS & VIEWS

### NESTING INFORMATION

What are the incubation and nestling periods of the Masked Weaver *Ploceus velatus*? The incubation period is 12-13 days and the nestling period is on average between 16 and 17 days, according to H. D. Oschadleus, writing in *Ostrich*, Vol.67, No.1. The same issue includes the results of a study by Alan A. Kemp and Keith S. Begg of nest sites of the Southern Ground Hornbill *Bucorvus leadbeateri* in the Kruger National Park, South Africa, and conservation implications. All were natural cavities with a median diameter of about 40cm (16in), 96% situated in 12 species of trees and 4% in rockfaces. A clutch of 1-3 eggs is laid but only one chick is ever fledged.

\* \* \*

### GROUND HORNBILLS BRED

A Southern Ground Hornbill *Bucorvus leadbeateri* has been hatched at Linton Zoo, Cambridgeshire. For most of the 38 day incubation period the egg was entrusted to a broody Buff Orpington Bantam. It is believed to be the first UK breeding of this species. The Abyssinian Ground Hornbill *B. abyssinicus* has been bred again this year at Paignton Zoo, Devon, also using a bantam.

\* \* \*

### GREY PARROT LIKELY TO DISAPPEAR FROM KENYA

Owing to continuing forest destruction and the resultant loss of nest sites, probably fewer than ten Grey Parrots *Psittacus erithacus* survive in the Kakamega Forest in western Kenya, according to the recently published *Birds of Kenya and Northern Tanzania*. The Grey Parrot was formerly fairly common and widespread in both the Kakamega and Nandi Forests.

Small numbers of Red-faced Lovebirds *Agapornis pullaria* can still be found in bushed grassland and cultivation along the Uganda-Kenya border. This species too was formerly more widespread in western Kenya, where it used to be found from Mt Elgon south to Kakamega and Nyarondo. The number of Splendid Starlings *Lamprolornis splendidus* has declined drastically due to extensive deforestation and the Purple-crested Touraco *Tauraco porphyreolophus chlorochlamys* is becoming increasingly rare in south-east Kenya, and there are no recent records of it from northern Tanzania. The introduced Java Sparrow *Padda oryzivora*, formerly common on the islands of Zanzibar and Pemba, is found now in small numbers only on Pemba Island.

## NEWS FROM PARADISE PARK

This year Paradise Park, at Hayle, Cornwall, has opened a major new feature called 'Parrot Jungle'. Four large aviaries measuring up to 14ft (4.3m) high have been constructed to the very high specification needed for macaws and cockatoos. Housed in them are Palm Cockatoos *Probosciger aterrimus*, Blue-throated Macaws *Ara glaucogularis*, Red-tailed Amazons *Amazona brasiliensis* and Toco Toucans *Rhamphastos toco*. Bamboo, tree ferns and elephant grass have been planted to enhance the tropical atmosphere of the area. Further aviaries will be added in the second phase early in 1997.

New species for Paradise Park include Cape Parrots *Poicephalus robustus*, Stella's Lories *Charmosyna papou stellae* and Blue-breasted Kingfishers *Halcyon malimbica*.

Keas *Nestor notabilis*, Triton and Leadbeater's Cockatoos *Cacatua galerita triton* and *C. leadbeateri*, Blue-fronted Amazons *A. aestiva*, Patagonian Conures *Cyanoliseus patagonus* and Alexandrine Parrakeets *Psittacula eupatria* have all reared chicks during 1996.

Crowned Cranes *Balearica pavonina*, Sarus Cranes *Grus antigone*, Wattled Cranes *Buggeranus carunculatus* and Stanley Cranes *Anthropoides paradisea* all produced chicks, as did Temminck's Tragopans *Tragopan temminckii*, Palawan Peacock Pheasants *Polyplectron emphanum* and Argus Pheasants *Argusianus argus*. Yellow-fronted Woodpeckers *Melanerpes flavifrons* now have second generation young filling the Tropical House, and the Hill Mynahs *Gracula religiosa* raised two chicks.

Although many Humboldt Penguins *Spheniscus humboldti* have been hand-reared by keeper Dale Jackson, for the first time two chicks have been parent-reared. This success is due to a change in the feeding regime which helps the incubating birds to remain dry and prevents the chilling of the eggs. At the time of writing there were five eggs in the nests, so more young may hatch later. A collecting box in the park has this season raised over £800 (about US\$1,200) for the Falklands Conservation 'Penguin Appeal'.

\* \* \*

## IN THIS DARK HOUSE

Louise Kehoe has written a book titled, *In This Dark House*, the extraordinary story of her father, Berthold Lubetkin, the architect who designed London Zoo's famous penguin pool and often described as the 'father of British modernism'.

\* \* \*



## RED SISKIN RECOVERY PROJECT

A number of aviculturists concerned about the plight of the Red Siskin *Carduelis cucullatus*, have formed the Red Siskin Recovery Project (RSRP) under the auspices of the American Federation of Aviculture (AFA). Using a captive breeding programme, the project hopes one day to saturate the worldwide market for Red Siskins and thereby ease the pressure on the remaining wild birds. Anyone interested in becoming a RSRP breeder or learning more about the project should contact Dr Gail Gatewood-Colwell, 4287 Mission Bell, Las Cruces, New Mexico 88011, USA.

\* \* \*

## FORTY-FIVE BIRDS REPORTED STOLEN

It seems that bird theft is rapidly becoming a worldwide problem. In South Africa though birds are not stolen for monetary gain or as a way of obtaining rare species. Private collections and bird gardens are being targeted at night and the birds taken just a short distance, before being plucked, roasted on a make-shift wood fire and eaten by, it is said, poor, unemployed local people.

Peafowl, ducks and geese have been taken, pigeons, including five Nicobar *Caloenas nicobarica* and two Nutmeg Pigeons *Ducula bicolor*, francolins, guineafowl, eight Chinese Painted Quail *Excalfactoria chinensis*, and even an African Grey Parrot *Psittacus erithacus*. Neville Brickell of the Avicultural Research Unit there wrote to say that during the past 12 months, 45 birds have been reported stolen in KwaZulu-Natal Province.

\* \* \*

## OVER FIFTY ECHO PARRAKEETS RAISED

The World Parrot Trust based at Paradise Park continues to raise funds for parrot conservation and welfare. Support has continued for the endangered Echo Parrakeet *P. echo* on the island of Mauritius, including making the arrangements for a visit by Andrew Greenwood to advise the Jersey Wildlife Trust team headed by Carl Jones. Working with the Mauritius Wildlife Trust, over 50 Echo Parrakeets have now been raised.

The 'Parrot Action Plan' was given a boost by Ruud and Ria Vonk from the WPT Benelux branch, who visited Paradise Park and handed over a donation of £1,000 (about US\$1,500) for this vital project to co-ordinate parrot research.

Plans for a 'Parrot Sanctuary' at Paradise Park have been announced. Further accommodation is required so that the many birds offered to the park can be taken in and housed. These are often pets which have for many years lived in unsuitable cages, often without seeing another bird.

## GREEN PEAFAWL RETURN

The Green Peafowl *Pavo muticus* is recolonising parts of its former range in the Huai Kha Khaeng Wildlife Sanctuary in western Thailand, already a stronghold for this threatened species. The main population there, numbering about 300 birds, live in the sanctuary's main river valley. Now about ten sub-adult males and females have set up territories in the Thap Salao valley some 30km (18miles) east. This welcome news comes from *World Birdwatch*, Vol.18, No.3, published by Birdlife International. The same issue includes articles about protecting lowland forest in Thailand for Gurney's Pitta *Pitta gurneyi*; the birds of the island of Buru; and the Corncrake *Crex crex*.

\* \* \*

## NEW APPOINTMENT

Richard Meyer, better known to aviculturists perhaps as Richard Mark Martin, the author of a number of books and articles about birdkeeping, who has worked in several collections including Padstow Tropical Bird Gardens, where he was Curator, was recently appointed Centre Co-ordinator and Animal Care Lecturer for Cannington College, at Paignton Zoo. The two-year BTEC (Business & Technical Education Council) National Diploma in Animal Care has 24 students and is a partnership between the Devon zoo, Cannington College, Bridgwater, Somerset, and Paignton Community College. A further development in Paignton Zoo's excellent 30 year commitment to education, it builds on the Somerset college's success with similar enterprises at Bristol Zoo and Cricket St Thomas Wildlife Park.

\* \* \*

## BLUE QUAIL BECOMING RARE

Although the Common and Harlequin Quail *Coturnix coturnix coturnix*, *Coturnix c. erlangeri* & *C. delegorguei* remain fairly common in East Africa, the smaller Blue Quail *Excalfactoria* (or *Coturnix*) *adansonii* is now only a rare intra-African migrant. It used to breed near Kitale and at Eldama Ravine, and has bred on the Ngong Escarpment in Kenya. Recently, however, there has only been a few scattered records of it there during the rainy season, mainly in the Mara Game Reserve. In northern Tanzania, it is known now only from the Mkomazi Game Reserve. Though it is thought that it may still breed on Pemba Island, off the coast of north-eastern Tanzania. As it is so like the Chinese Painted Quail *E. chinensis*, so much so that it is sometimes treated as a race of it, the Blue Quail must surely be a bird for which it would be relatively easy to institute a captive breeding programme!

\* \* \*

## BROAD-TAILED PARADISE WHYDAH BRED

Neville Brickell has written from South Africa to report the first breeding there of the Broad-tailed Paradise Whydah *Vidua orientalis kadugliensis* by Peter Greenaway, a member of the Natal Bird Breeder's Society. The pair were housed together with a few waxbills and *Serinus* species in an aviary measuring 8m long x 3m wide x 1.8m high (26ft long x 9ft 9in wide x 6ft high). In its natural habitat this whydah uses the Melba Finch *Pytilia melba citorior* as its brood host, but in Peter Greenaway's aviary the host species was the Red-faced *Pytilia P. hypogrammica*. For this rare first breeding he was awarded a Certificate of Merit by the South African National Cage Bird Association.

\* \* \*

## RARE PARROT SIGHTED

A Birdlife International and Indonesian Department of Nature Conservation expedition which was evaluating boundaries for a new reserve to protect the forests of the remote Kelapat Mada Mountain range on the island of Buru, saw a Black-lored Parrot *Tanygnathus gramineus*, a species of which there had only been one reported sighting during the last 70 years. Members frequently heard large parrots calling at night on the mountains and are confident that they were this species. If they are correct, it will confirm suspicions that the lack of records is due to the fact that this parrot is nocturnal.

The expedition also succeeded in finding two species which were previously known only from museum specimens collected in the 1920s. One of these being the Madanga or Rufous-throated White-eye *Madanga ruficollis*. It found no signs of the Blue-fronted Lorikeet *Charmosyna toxopei*, which has remained virtually unknown since its discovery in 1926. In 1980 it was reported to be common in plantations and secondary forest in Teluk Bara. Since when, a Manchester University team and this expedition both tried for several weeks to find it in the area, but failed. According to local residents it can be found at inland sites and in some years appears close to the coast.

\* \* \*

## LATE NEWS

It is reported that Tony Silva has received an 82 month jail sentence for smuggling more than 185 Hyacinth Macaws *Anodorhynchus hyacinthinus* and other rare birds into the USA from South America.

In the UK, a pair of Lear's Macaws *A. leari* were among 11 birds stolen from Harry Sissen's aviary at Northallerton, north Yorkshire. Other birds reported stolen included a pair of Blue-throated Macaws *Ara glaucogularis*, one of which was recovered later after being found flying free.



## A REQUEST FOR INFORMATION ABOUT KEEPING THE PURPLE-BELLIED PARROT

The Purple-bellied Parrot *Triclaria malachitacea* is the subject of a research project being conducted by recently graduated Spanish biologist, Juan Cornejo Castro. It involves observations of pairs in captivity, description and analysis of the captive diet, analysis of medical history, reproduction and mortality, plus any useful information which can be gleaned from the relevant literature.

He would like to receive information from any member who has direct experience of keeping this species in captivity. The results of his research will be circulated so as to be of benefit to keepers of *Triclaria malachitacea*. Information should be sent to:- Juan Cornejo Castro, c/o Loro Parque Fundación, 38400 Puerto de la Cruz, Tenerife, Canary Islands, Spain.

\* \* \*

## CAPE BARREN GOOSE STUDBOOK

In conjunction with Donald Bruning, PhD, Chairman and Curator of Ornithology of the Wildlife Conservation Society, Ms Drue Bauer is gathering information about captive Cape Barren or Cereopsis Geese *Cereopsis novaehollandiae* for a proposed studbook. Because of the Australian export ban there is a limited gene pool of Cape Barren Geese living outside Australia. Collecting information on the captive population will help co-ordinate breeding management to ensure future generations of this unique and beautiful species.

The assistance of owners/holders of this species is of utmost importance. They are asked to determine as accurately as possible the hatching date, location and parentage of each bird. Even approximate dates and locations can be helpful. They are also asked to provide details of any deceased birds, including the date and, if possible, the cause of death. Historical data will be included in the completed report, the first issue of which will be sent to all respondents. Owners/holders are asked to complete an Information Questionnaire for each goose. They may ask for as many forms as they require or simply have one from which to make the required number of photocopies. Copies of the Cape Barren Goose Studbook Information Questionnaire are available from The Avicultural Society (when writing please state how many forms you require and enclose a stamped addressed envelope) or direct from Ms Drue Bauer, Studbook Keeper, 57770 722nd Road, Plymouth, Nebraska 68424, USA. Tel: 402-656-3202. Any additional information is welcomed and can be included on a separate sheet of paper or on the back of the forms.



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BIRDS

# AVICULTURAL MAGAZINE



VOLUME 102  
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1996

## THE AVICULTURAL SOCIETY

The Avicultural Society was founded in 1894 for the study of British and foreign birds in freedom and captivity. The Society is international in character, having members throughout the world.

Membership subscription rates per annum for 1996 as for 1995: British Isles £18.00: Overseas £21.00 (plus £6.00 for airmail). (U.K. funds please). The subscription is due on **1st January of each year** and those joining the Society later in the year will receive back numbers of the current volume of the AVICULTURAL MAGAZINE.

Subscription, changes of address, orders for back numbers etc. should be sent to:

THE HON. SECRETARY AND TREASURER, THE AVICULTURAL SOCIETY, % BRISTOL ZOOLOGICAL GARDENS, CLIFTON, BRISTOL, BS8 3HA, ENGLAND.

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## THE FIRST SUCCESSFUL BREEDING OF THE BLUE-RUMPED PARROT *Psittinus cyanurus* AT LORO PARQUE

by Roger G. Sweeney

The Blue-rumped Parrot *Psittinus cyanurus* occupies its own monotypic genus with its closest relatives being the Philippine Guaiabero Parrot *Bolbopsittacus lunulatus* and the parrots of the genus *Psittacella* which are unknown in European aviculture. The Blue-rumped Parrot measures just 18cm (7in) in length and seldom exceeds 85g (not quite 3oz), making it one of the smaller species of Asian parrots. The male has a greyish-blue head, with a red upper mandible and a brownish-red lower mandible. The female has a brown head and a greyish-brown bill. Young birds still in immature plumage have a green head and generally green body plumage. However, the green head feathers of most juvenile males have a slight blue wash, giving an early indication of their gender.

The range of this species covers mainland south-east Asia, from Thailand through Malaysia to Borneo and Sumatra, Indonesia. Three regional races have been described (Forshaw, 1989) but the differences appear to be marginal. The Blue-rumped Parrot is most commonly reported as being seen in pairs or small groups of adults in their favoured habitat of lowland forest and woodland, sometimes also being found in orchards and plantations. At the end of the breeding season, young birds are generally more gregarious than the adults and can be seen flying in large groups and often feeding communally in oil palm plantations, which are in fruit soon after these birds have fledged.

The small size and quiet nature of these birds make them suitable for keeping indoors in countries with a temperate climate. At Loro Parque the subtropical climate of the Canary Islands means that our birds remain outside throughout the year, one pair on exhibition and two pairs in our off-exhibit breeding centres. The pairs housed in the breeding areas are accommodated in suspended cages which measure approx. 3m x 1m x 1m (9ft 9in x 3ft 3in x 3ft 3in), while the pair on exhibition are housed in a large conventional aviary which allows the birds access to the floor. The Blue-rumped Parrot is however very rarely found low down in the aviary, preferring instead to



spend practically all of the time on the highest perches available.

The diet of these birds is as follows:-

Morning feed at 7.00am:- A salad which contains items such as apple, pear, papaya, tomato, orange, kiwi fruit, prickly-pear, alfalfa, beetroot, lettuce, carrot, pepper and other seasonally available fruits and vegetables (most of them diced). A second smaller dish contains a commercial dietary pellet. During the breeding season a special supplement cake is baked fresh each day at Loro Parque, and a few pieces of this are added to the food dish which contains the dietary pellet.

Afternoon feed at 7.00pm:- Seeds such as millet, hemp, niger, sunflower (just a small amount), safflower etc. and some cooked beans, such as mung and black-eyed beans, to which are added lentils and cereal grains, along with pine nuts and peanuts.

All drinking water is purified by first being chlorinated then passed through a reverse osmosis machine which is equipped with an ultra-violet light sterilisation unit. Bathing water is provided daily by showers which are built into the design of every aviary in the park.

Despite having been in the collection at Loro Parque for many years, successful breeding was not recorded until the current 1996 breeding season. Towards the end of May, we noticed that copulation was taking place much more frequently between the two birds on exhibition, and that the female was starting to spend a lot of time inside the nest-box. The latter measures 45cm x 21cm x 21cm (17¾in x 8¼in x 8¼in), with an 8cm (3½in) entrance hole. Wood shavings are used as the sole nesting medium.

When the female began to spend extended periods in the nest-box, more regular nest inspections were carried out and it became clear that the female was in the process of preparing a scrape in the wood shavings. When the nest-box was inspected on the 10th June, we found that one egg had been laid. A week later the clutch had increased to four eggs. Only one hatched. This took place on the 6th July. The three unhatched eggs measured as follows:-

	Egg 1	Egg 2	Egg 3
Length	27.9mm	23.7mm	23.5mm
Width	20.0mm	20.5mm	20.1mm
Shell thickness	0.1mm	0.1mm	0.1mm

On first viewing the chick in the nest-box, I was instantly reminded of the newly-hatched chicks of the Guaiabero Parrot, the progress of which I had followed carefully when breeding this species three years earlier. The newly-hatched Blue-rumped Parrot had pink skin and lacked natal down. Some reports have stated that Blue-rumped Parrot chicks have a few strands of natal down on their backs which are often lost during the first few days

after hatching. The chick described here was already dry and active by this time and no natal down was present. The chick seemed well cared for by the female, which seldom left the nest-box even when it was being inspected, so it was left to be parent-reared. On all subsequent occasions when the chick was observed in the nest, it had a full crop and seemed to be developing well.

However, on the 30th July I observed the female outside the nest-box and was concerned about her stance and movement. The bird was captured and examined by one of the Loro Parque veterinarians and returned to the aviary for further observation. By the afternoon our concern had grown and so, regretfully, the female was recaptured and taken to our clinic facility. At the same time the chick was removed to our nursery department to be hand-reared. It weighed 66.8g. The following morning the accompanying photograph of the chick was taken. In the nursery it continued its development without any problems. It was fed with Pretty Bird hand-rearing formula (18% protein and 12% fat). By the 23rd August the chick was fully feathered and almost weaned. The weights recorded for the chick each morning from the time it entered the nursery until it was weaned were:-

Date	Age	Weight
01.08.96	25days	69.4g
02.08.96	26days	71.5g
03.08.96	27days	71.9g
04.08.96	28days	74.4g
05.08.96	29days	76.0g
06.08.96	30days	76.9g
07.08.96	31days	79.3g
08.08.96	32days	80.8g
09.08.96	33days	81.5g
10.08.96	34days	83.7g
11.08.96	35days	81.5g
12.08.96	36days	82.5g
13.08.96	37days	81.7g
14.08.96	38days	82.4g
15.08.96	39days	83.3g
16.08.96	40days	80.0g
17.08.96	41days	81.3g
18.08.96	42days	81.5g
19.08.96	43days	79.2g
20.08.96	44days	79.7g
21.08.96	45days	81.9g
22.08.96	46days	80.0g
23.08.96	47days	82.0g



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**Blue-rumped Parrot *Psittinus cyanurus* chick at 25 days old**

The natural fledging age of this species has been reported as being six weeks (42 days) and the adult weight 85g (Low, 1992). Adults at Loro Parque have weighed between 75g-83g (average 78g). It is not known what degree of natural variation there is in the body weights of wild birds from different regions of the species' range. The chick's growth rate while in the nursery was comparatively slow when compared to that of other species, but considering that it had already achieved in the region of 85% of its expected adult weight (when compared to the average adult weight records) by the age of 24 days, then the slower growth in the second half of its development is not surprising. The chick began to be weaned at the age which would have been expected, had it remained with its parents, and after weaning its weight settled to that of the adults weighed at Loro Parque.

The Blue-rumped Parrot has been imported into western aviculture on several occasions during recent decades and on each occasion the birds generally adjusted well to captivity, living for many years. There was though no consistent breeding success. Indeed the opposite has been the case, with very few breeding successes ever being documented. If this species is to remain in aviculture for future generations to enjoy, a much better understanding is needed of its requirements and consistent breeding must be achieved.

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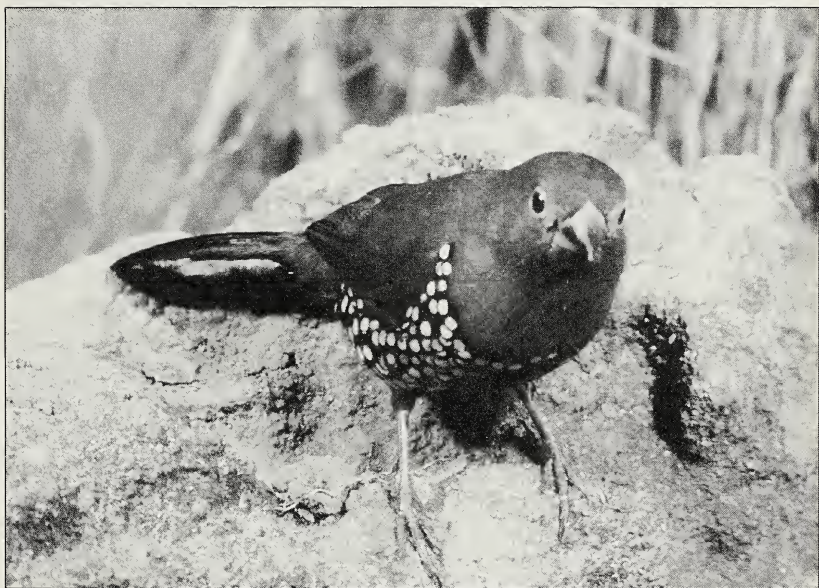
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## BREEDING THE PINK-THROATED TWINSPOT

by Neville Brickell and Chris Koen

The Pink-throated Twinspot *Hypargos margaritatus* may also be known as the Rosy or Verreaux's Twinspot. It is about 5in (13cm) long and the male and female are visually sexable. The male's crown, nape, mantle and wings are russet brown. The face, sides of the neck and chin, down to the breast are pinkish mauve, with the lower breast, flanks and belly black, with pinkish white spots. The lower rump and upper tail-coverts are dark pinkish mauve and the tail is black, washed with wine-red. In the case of the female, the pinkish mauve of the head and breast is replaced by pale grey, and the spots on the underparts are white. A juvenile, on leaving the nest, was observed to have earth-brown upperparts with a russet tinge, a pale pinkish rump and a narrow black band at the base of the tail. The underparts were greyish-brown.



Neville Brickell

**Male Pink-throated Twinspot *Hypargos margaritatus***

It is found in eastern KwaZulu-Natal, north from the St Lucia Lake region, to the Lebombo Mountains and adjacent Swaziland and Mpumalanga Province, South Africa, extending north through southern Mozambique to the Save River. It is usually encountered in small family groups feeding on the ground at the edge of bush, which flit into dense

cover when alarmed. The Pink-throated Twinspot has habits similar to those of the better-known Peters' Twinspot *H. niveoguttatus* but, as a rule, inhabits drier habitat. Its call is like that of a firefinch, a trilling 'tit, tit tititit'. Not a great deal is known about its diet, other than that it feeds on seeds and insects.



Neville Brickell

**Female Pink-throated Twinspot *Hypargos margaritatus***

An oval-shaped nest, consisting of leaf ribs and skeletons, mixed with leaves, inflorescences and spiders' webs, lined with palm fibre, and with a side entrance 4-6cm (1½-2¼in) in diameter, observed in the wild, was sited at the base of a palm frond. The nesting season is given as January in northern KwaZulu-Natal. Incubation and nestling periods in the wild are, apparently, unrecorded.

The first captive breeding was recorded in 1968, by a German aviculturist, R. Burkard. The nest was built in a half-open finch nest-box, placed in an exposed position in the aviary. The clutch consisted of four eggs, from which three nestlings were reared to maturity. My (C.K.) breeding of this species in South Africa is the only other known record. The pair were housed in an aviary measuring 3m long x 1.2m x 2.1m high (9ft 9in x 4ft x 6ft 10in). A sheet of flat asbestos was used as a roof covering for the purpose of giving privacy to these shy, delicate birds. For extra seclusion about 70% of the ground area was covered with Feather Grass *Pennisetum villosum* and a single Southern Mountain Bamboo



*Arundinaria tesellata*. As a nest site, a large dried-out exotic shrub was suspended from the aviary roof. Fortunately, the pair found it to their liking and were soon observed constructing a nest of Teff Grass *Eragrostis tef* which was lined with Natal Redtop *Rhynchelytrum repens* and finished off by the addition of a small protruding platform no more than 3cm (1¼in) in front of the entrance hole.

Four eggs were duly laid, of which three hatched after an incubation period of 14 days. At ten days old the nestlings were fitted with closed rings and registered with the Natal Bird Breeder's Society. Burkard (1968) described the mouth markings as 'consisting on 3 black spots on a yellow area of palate; the gape tubercles are blue, the rest of the mouth and the tongue reddish'. The fledging period for my birds was 20 days.

The diet of the adults consisted of Japanese millet, including spouting seeds, mixed millets, with the addition of canary seed, cultivated wild grass seed and a daily supply of mound termites. Avi-Plus Canary Rearing Food was fed to them daily during the breeding.

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*Neville Brickell and Chris Koen are members of the Natal Bird Breeder's Society. Neville Brickell is a foundation/life member, he is also director of the Avicultural Research Unit (Southern African Region). At the South African National Cage Bird Association Conference in July 1996, Chris Koen was awarded the Gold Medal for the 'Breeding of the Year' for his success with the Grey-headed Olive-back Nesocharis capistrata.*



## MONITORING FOOD INTAKE IN A MIXED SPECIES EXHIBIT

by Maria Kaprielian, Ellen S. Dierenfeld and Doug Piekarz

One of the biggest challenges in a mixed species aviary is ensuring all birds consume adequate amounts of nutritionally appropriate diets. Here we describe the results of an eight day feeding trial conducted in a mixed species exhibit at the Wildlife Conservation Society, Bronx, New York. The study was performed with three main objectives:

- 1) to document dietary preferences,
- 2) measure daily intake of nutrients for comparison with estimated requirements,
- 3) determine the economics of food wastage.

### Exhibit and Diet Description

The indoor exhibit depicting habitat destruction from illegal logging operations in a south-east Asian rainforest habitat measures approximately 9.1m long x 10.7m wide x 12.2m high (29ft 7in x 34ft 9in x 39ft 0in), with natural lighting from skylights and incandescent lighting set to a 12 hour (0600-1800) light schedule, including simulated dusk and dawn through the use of automatic dimmers. The exhibit is planted with natural vegetation, and contains a free-running stream and pool. The total animal census during the period of this study (15th-26th January, 1996) included: 1.0 Fairy Bluebird *Irena puella*; 1.0 Black Drongo *Dicrurus macrocercus*; 0.1 Golden-crested Mynah *Ampeliceps coronatus*; 0.0.2 Red-winged Laughing Thrush *Garrulax formosus*; 0.0.1 Sooty-headed Bulbul *Pycnonotus aurigaster*; 1.1 Gaudy Red-fronted Barbet *Megalaima mystacophanos*; 1.1 Northern Pied Hornbill *Anthracoceros malabaricus*; 1.2 Indian Pygmy Goose *Nettapus c. coromandelianus*; and 1.1 Bulwer's Wattled Pheasant *Lophura bulweri*. These nine species were assigned one of five specific diets, but all had access to all food pans in the exhibit. The specific diets include:-

**MIXED** Comprising (by weight) ½ a commercially prepared low-iron semi-moist diet, and ½ supplemented vegetable/fruit salad with chopped kale.

**SOFTBILL** Commercially prepared low-iron semi-moist diet garnished with soaked dog kibble, and a horsemeat-based commercially prepared bird of prey diet.

**PELLET/SALAD** Commercially prepared avian pellets, plus salad described above.

**PYGMY GOOSE** Crumbled avian pellets and mixed seeds coated with vitamin E and calcium supplements, garnished with chopped kale.

**HORNBILL** Supplemented pieces of fruit (this diet varies by season).

Apart from garnishes, other specific foods (mealworms and peanuts) used for management purposes were offered in limited quantities during the course of this study. The birds were fed twice daily, using a total of seven food pans placed at varying heights in the exhibit. All food offered and any remaining was weighed for an eight day period. The types and amounts of food offered to the entire group during the course of this study are listed in Table 1, diet assignments by species are given in Table 2.

### **Intake and Nutrient Composition of Diets**

Estimated maintenance energy requirements (in kcal) were calculated from body weights using equations for passerines [ $((115 \text{ kcal})W^{0.75}) \times 2 \times$  number of individuals] or non-passerines [ $((74 \text{ kcal})W^{0.75}) \times 2 \times$  number of individuals] where W is body weight in kilograms (Robbins, 1993). Total kcal requirement for the entire group was determined by summing individual species (Table 2). Actual body weights based on animal records were used for most of this calculation, except estimates (Dunning, 1993) were used for the Black Drongo and Red-winged Laughing Thrush.

Measured consumption of diet ingredients is shown in Table 3. Nutrient composition of diets offered versus consumed (Table 4) was determined using the Animal Nutritionist software program (N-Squared Computing, Silverton, OR), with human metabolizable energy (ME) values used to estimate calories in produce items. Actual digestibility (metabolizability) of various produce items has not been determined for birds. Because of the simpler digestive anatomy of most avian species and shorter residence time of food in the gastrointestinal tract, it is likely that human ME values overestimate the calories that would be provided to bird species consuming the same diet items.

Clearly, certain items were highly preferred and consumed almost entirely (peanuts, mealworms [management foods, not considered regular diet ingredients], grapes, blueberries, and vitamin-E seed). Softbill Fare® and soaked dog kibble appeared the least preferred diet items regardless of time of feeding. Apples and chopped kale were consumed in moderation. A total of 637g dry matter (DM) was offered to this exhibit group daily (1712g as-fed basis), with 369g DM consumed (1070g as-fed basis). Approximately 40% of the diet (DM or as-fed basis) was discarded daily. Dry matter intake (DMI) amounted to 13.0% of total body mass (2.839 kg) of the exhibit group.

Diets offered were high in soluble carbohydrates (CHO), and overall met nutrient requirements established for adult domestic poultry (see Table 4), the most complete avian model available. However, the overall nutrient composition may be marginal for reproductive or rapidly growing chicks of some species. Birds selected diets that were somewhat lower in

protein and fat, and higher in CHO, than offered. Calcium (Ca) requirements of breeding chickens (3.78% of DM), an indeterminate layer, likely greatly overestimate the Ca requirements of any of the species in this study although no detailed requirements are available. The Ca:P ratio of the diet consumed by birds in this study, 1.27:1, is within suggested ranges (1:1 to 2:1; Robbins, 1993). Fat-soluble vitamins A, D, and E were consumed in quantities well above estimated requirements, but no apparent health problems have been linked to excessive levels of these nutrients in our collection. Because vitamins A, D, and E are synergistic and antagonistic (Olson, 1984), it may be prudent to evaluate all three in ratio with respect to each other (100:10:1, A:D:E). We also evaluated iron content in the diet, as excess dietary iron it has been suggested may cause problems in starlings as well as hornbills (Dierenfeld et al., 1991), and found it to be within suggested limits (<200 mg/kg DM).

Total kcal offered (2215; see Table 4) to this exhibit group during the trial averaged 220% of estimated requirements. Quantified intake indicated 1291 kcal consumed, or 128% of calculated energy requirements. As a general guideline, we attempt to develop diets that contain 130-150% of total estimated calories to minimize potential selection of nutritionally imbalanced items while at the same time providing a 'cushion of safety' for unknown energetics of birds.

From this study it is apparent that we could reduce waste while still providing palatable, nutritionally balanced diets initially by simply eliminating or decreasing least preferred items. However, limit-feeding preferred items identified is also an important consideration. Peanuts and mealworms are excessive in fat and deficient in calcium, and unsupplemented fruits such as grapes and blueberries contain very little protein and are also poor sources of calcium. These nutritionally imbalanced foods should be offered in limited amounts to minimize potential problems. We attempt to offer such items as 'management foods' for enticement, medicating, censusing, etc., and limit calorie intake of management foods to no more than 20% of total estimated needs. The calculated kcal estimate of 1005/day for this group (see Table 2) would thus allow approximately 200kcal from management foods. In this trial, the mealworms and peanuts provided 59kcal while garnishes (soaked kibble, horsemeat, and chopped kale) provided 286kcal offered (Table 5). Thus 345kcal were offered as management foods or 34% of estimated needs. However, the birds actually consumed only 147 kcal from these foods or 11% of estimated needs because they wasted much of the soaked kibble from the am and pm diets (Table 5).

On average, the birds consumed less food, but more total calories (higher energy content in food items) during the daylight period (when active) than during the night even though food was available for more hours



following the afternoon feeding. A majority of energy supplied during the day was from dry foods - avian pellets (approximately 46% of total kcal) and supplemented seeds (coated with vitamin E and calcium carbonate; 20% of total kcal). A nutritionally balanced (to the best of our knowledge) supplemented produce salad supplied a further 20% of kcal consumed. Thus 86% of dietary energy intake was provided by only three food items.

From the data collected, energy requirements for birds eating certain diets can be calculated and compared with actual energy intake. The MIXED diet (bird salad + softbill diet), SOFTBILL diet (softbill diet, horsemeat, and soaked dog kibble) and PELLET/SALAD diet (Avi-Pels® + bird salad) all contained at least one food item in common. Table 5 shows that approximately 700 kcal was consumed from these three diets daily. In this study, the MIXED diet eaters (Fairy Bluebird, Golden-crested Mynah, Red-winged Laughing Thrush, Sooty-headed Bulbul, and Gaudy Red-fronted Barbet), had an estimated energy requirement of 206 kcal/day. The Black Drongo, a SOFTBILL diet eater, was expected to need about 42 kcal/day. The Bulwer's Wattled Pheasant, which ate PELLETS/SALAD, should have needed 381 kcal/day (Table 2). Thus these three sets of birds would have had an estimated energy requirement of 630 kcal/day which would have been met by the combined ingredients in the diets consumed. The three Indian Pygmy Geese, consuming crumbles and supplemented seeds, required a calculated 134 kcal per day. These diet ingredients, as eaten, provided 248 kcal thus energy requirements for this species were underestimated, or other birds consumed the remainder. The pair of Northern Pied Hornbills needed a calculated 242 kcal per day; 278 kcal was provided by the fruits consumed.

### **Economic Considerations and Dietary Recommendations**

Intake and preference data resulted in an economic evaluation of approximately US\$1.04 (roughly 65p) per day in wasted food (see Table 5). A preferred diet item, bird salad, contributed approximately one-third of the cost of wastage, while a less preferred commercial product (Softbill Fare) comprised almost half the daily wastage (US\$0.47 (roughly 29p)). Specific recommendations from the single study include:-

- 1) modification of current low-iron softbill diet and/or identification, and testing of a new product for the feeding programme
- 2) decrease amount of bird salad offered to this group by one-quarter to minimize wastage
- 3) eliminate soaked dog kibble as a management food in this exhibit group
- 4) ensure that management foods supply no more than 20% of measured calorie intake daily

**Table 1. Diet components offered daily in mixed species exhibit (data on an as-fed basis).**

AM Diets	g Offered	% of total	PM Diets	g Offered	% of total
Softbill Fare <sup>®1</sup>	109.4	13.6	Softbill Fare <sup>®</sup>	88.2	9.7
Kibble <sup>2</sup>	79.6	9.9	Kibble	59.9	6.6
Bird salad <sup>3</sup>	315.9	39.3	Bird salad	206.3	22.8
Mealworms	12.4	1.5	Mealworms	8.2	0.9
Meat <sup>4</sup>	13.2	1.6	Meat	13.4	1.5
Avi-Pels <sup>®5</sup>	141.8	17.6	Apple	133.2	14.7
E-seed <sup>6</sup>	51.0	6.3	Banana <sup>8</sup>	260.9	28.8
Kale	12.0	1.5	Grapes	89.6	9.9
Peanuts	3.5	0.4	Blueberry	46.3	5.1
Crumbles <sup>7</sup>	65.9	8.2			

1. Reliable Protein Products, Rancho Mirage, CA, USA.
2. Ken-L-Ration<sup>®</sup> biscuit, small sized kibble, H.J. Heinz Co., Newport KY, USA.
3. Includes fruit, mixed vegetables, and greens coated with powdered Avi-Pels<sup>®</sup>.
4. Bird of Prey Diet<sup>®</sup>, Nebraska Brand Packing, Inc., North Platte, NB, USA.
5. Modified avian pellets, Blue Seal Feeds, Lawrence, MA USA.
6. Mixed finch seed with calcium carbonate and vitamin E (Rovimix<sup>®</sup> Hoffmann-LaRoche, Inc.) supplements.
7. Crumbled Avi-Pels<sup>®</sup>.
8. Without skin

**Table 2. Calculated Maintenance Energy (ME) requirements (kcal/day) for mixed species group.**

Common Name	Scientific Name	A	B	C	D
Fairy Bluebird	<i>I. puella</i>	1	0.073	32.4	Mixed
Black Drongo	<i>D. macrocercus</i>	1	0.105 <sup>1</sup>	42.4	Softbill
Golden-crested Mynah	<i>A. coronatus</i>	1	0.076	33.4	Mixed
Red-winged Laughing Thrush	<i>G. formosus</i>	2	0.105 <sup>1</sup>	84.8	Mixed
Sooty-headed Bulbul	<i>P. aurigaster</i>	1	0.035	11.9	Mixed
Gaudy Red-fronted Barbet	<i>M. mystacophanos</i>	2	0.078	43.6	Mixed
Northern Pied Hornbill	<i>A. malabaricus</i>	2	0.765	242.1	Hornbill
Indian Pygmy Goose	<i>N. coromandelianus</i>	3	0.202	133.8	Pygmy Goose
Bulwer's Wattled Pheasant	<i>L. bulweri</i>	2	1.400	381.0	Pellet/Salad
	TOTAL	15	2.629	1005.3	
<sup>1</sup> Estimated weight CRC. 1993	Calculated intake (kcal/day)		1286.7		

A - No. of Birds

B - Body Mass (kg)

C - Expected intake (kcal/day)

D - Diet Assignment by Species

**Table 3. Daily consumption in mixed species avian exhibit (data on an as-fed basis).**

AM Diets	g Consumed	% Eaten of Offered	PM Diets	g Consumed	% Eaten of Offered
Softbill Fare <sup>①</sup>	14.7	13.4	Softbill Fare <sup>®</sup>	31.1	35.3
Kibble <sup>2</sup>	13.4	16.8	Kibble	20.6	34.4
Bird salad <sup>3</sup>	220.6	69.8	Bird salad	147.8	71.6
Mealworms	11.9	96.4	Mealworms	7.8	95.1
Meat <sup>4</sup>	7.0	53.0	Meat	11.9	88.8
Avi-Pels <sup>5</sup>	87.1	61.4	Apple	58.4	44.3
E-seed <sup>6</sup>	44.5	87.7	Banana <sup>8</sup>	196.1	75.7
Kale	3.2	28.5	Grapes	89.2	99.6
Peanuts	3.5	100	Blueberry	41.9	90.9
Crumbles <sup>7</sup>	31.2	49.0			

1. Reliable Protein Products, Rancho Mirage, CA USA.
2. Ken-L-Ration<sup>®</sup> biscuit, small sized kibble, H.J. Heinz Co., Newport KY, USA.
3. Includes fruit mixed vegetables, and greens coated with powdered Avi-Pels<sup>®</sup>.
4. Bird of Prey Diet<sup>®</sup>, Nebraska Brand Packing, Inc., North Platte, NB, USA.
5. Modified avian pellets, Blue Seal Feeds, Lawrence, MA USA.
6. Mixed finch seed with calcium carbonate and vitamin E (Rovimix<sup>®</sup> Hoffmann-LaRoche, Inc.) supplements.
7. Crumbled Avi-Pels<sup>®</sup>.
8. Without skin

**Table 4. Nutritional composition of diets offered vs selected in mixed species aviary**

	Water %	CP %	Fat %	Total CHO	Ash	Ca	P	Vit A activity IU/g	Vit D3 IU/g	Vit E mg/kg	Iron mg/kg	kCal day	Am't g	Cost \$
Diet Offered(am)	49.88	19.38	7.72	65.60	7.30	0.84	0.66	24.47	2.12	297.00	206.8	1405.0	805.9	1.39
Diet Consumed (am)	51.93	17.69	7.78	68.00	6.53	0.75	0.61	26.11	2.00	346.70	195.10	787.0	466.0	0.82
Diet Offered (pm)	74.28	14.21	5.41	74.46	5.92	0.50	0.37	21.27	0.62	90.99	80.26	809.0	906.0	2.28
Diet Consumed (pm)	75.99	11.85	4.52	78.64	4.99	0.40	0.30	23.03	0.51	77.40	67.12	503.0	604.5	1.81
Total Diet Offered	62.80	17.50	6.88	68.83	6.79	0.72	0.56	23.30	1.58	219.90	160.30	2215.0	1712.0	3.67
Total Diet Consumed	65.47	15.46	6.53	72.06	5.95	0.62	0.49	25.00	1.42	241.40	145.30	1291.0	1070.0	2.63
Requirement (poultry)*		16.10				3.78	0.36	4.44	0.56	11.10	66.70			

\*1984 NRC data for breeding leghorn chickens



**Table 5 - Kcal offered and consumed, % wastage and cost of wastage of various diets**

Type of Diet	A	B	C	D	E	F	G	H
Softbill	230.8	31.0	186.1	65.5	81.9	62.5	0.29	0.18
Kibble (soaked)	135.3	22.7	101.8	35.1	75.5	60.7	0.05	0.03
Salad	221.1	154.4	144.4	103.5	28.9	26.7	0.20	0.13
Mealworms	24.8	23.9	16.4	15.7	3.6	4.7	0.00	0.00
Meat	21.5	11.4	21.8	19.4	44.8	10.7	0.01	0.00
Avi-pellets	429.6	257.4	n/f	n/f	38.6	n/f	0.02	n/f
" (crumbled)	199.7	94.5	n/f	n/f	51.0	n/f	0.01	n/f
E-seed	176.0	153.8	n/f	n/f	12.3	n/f	0.00	n/f
Kale	5.9	1.6	n/f	n/f	71.5	n/f	0.01	n/f
Peanuts	17.5	17.7	n/f	n/f	0.0	n/f	0.00	n/f
Apple	n/f	n/f	75.9	33.3	n/f	55.7	n/f	0.07
Banana	n/f	n/f	229.6	172.6	n/f	24.3	n/f	0.06
Grapes	n/f	n/f	54.6	54.4	n/f	0.4	n/f	0.00
Blueberries	n/f	n/f	20.8	18.8	n/f	9.1	n/f	0.02
<b>TOTAL</b>		768.4		518.3			0.59	0.49

A - Average kcal offered per day in am, ie amount offered (g) x energy value of diet (kcal/g)

B - Average kcal consumed per day in am, ie amount consumed (g) x energy value of diet (kcal/g)

C - Average kcal offered per day in pm, ie amount offered (g) x energy value of diet (kcal/g)

D - Average kcal consumed per day in pm, ie amount consumed (g) x energy value of diet (kcal/g)

E - % wastage in am (average) ie amount of diet left in am / amount of diet offered in am

F - % wastage in pm (average) ie amount of diet left in pm / amount of diet offered in pm

G - Average cost of wastage in am (\$) ie amount of diet left in am (grams) x cost/gram of diet

H - Average cost of wastage in pm (\$) ie amount of diet left in pm (grams) x cost/gram of diet

n/f - Not fed.

## Acknowledgments

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## A COLOURED BEAUTY

by Dr Michal Straka

Which aviculturist does not want to be remembered for something special in recording keeping and perhaps breeding some rare species at least once in his or her lifetime - something which has not hitherto been achieved by anyone else? It has been my good fortune to have this happen several times and one of the rarest species I have ever kept is a small and beautiful species, Severtzov's Tit Warbler *Leptopoeile sophiae*.



Dr Michal Straka

Severtzov's Tit Warbler *Leptopoeile sophiae*

Closely related to the Goldcrest *Regulus regulus* and Firecrest *R. ignicapillus* the weight of these tiny birds does not exceed 5-7g. My birds came from the vicinity of Alma-Ata, where they winter. Otherwise, they live and breed in the sub-alpine zone where forest gives way to dwarf pines. In Kazakhstan they are found only in the Tan-Shan mountains and Dzchungar Altai.

In *A Field Guide to the Birds of the USSR* (Flint, Boehme and Kostin), the plumage is described as '...softly feathered and fluffy'. Colouring is best described as exquisite - the crown is cinnamon-brown with a violet tinge, neck and back grey, wings and tail black-brown, throat, breast, flanks and rump violet-blue, abdomen cinnamon. There is a clearly defined light brown eye-stripe. The female is duller with a grey-brown undersurface.

It is clear that my birds were captured by netting. It surprises me how they were able to survive a long plane journey from Tashkent to Prague, and then to Bratislava. It may be something of a miracle they survived bearing in mind the speed of metabolism of insectivorous birds.

Despite the fact that the friend who sent them to me fed them on the smallest mealworms, the male cowered and was soft-feathered when released into his quarantine cage. I immediately installed an infra-red lamp which conspicuously increased the environment temperature.

The bird was fed only on the wingless form of *Drosophila melanogaster* and the smallest mealworms. Although it improved within a few days it was never completely healthy and died two months after arrival. We cannot comment on the reproduction of these birds in captivity for it is considered a great success if they survive for more than half a year.

Because of their very small body weight it is not feasible to initiate any therapy because disease develops quickly into an acute form. Then the birds stop eating and this signifies impending death because of their fast metabolism.

They need a continuous supply of food and are particular about diet and temperature. As a result, these coloured beauties have almost certainly never been bred. Moreover, they are also rare in the wild and their import into Europe or elsewhere is extremely rare and sporadic. They arrived in Slovakia only on this one occasion. I consider excellent conditions of transportation, diversity of diet, strict hygiene of the breeding facility and quality of air as very important elements in small tit breeding. It is only with such conditions that these delightful birds may be bred.

*Michal Straka, MD, PhD, who in the previous magazine wrote about the Caucasian Great Rosefinch, lives in Slovakia.*



## BREEDING THE SINGING STARLING *Aplonis cantoroides*

by D.C.E. Hunter

The Singing Starling *Aplonis cantoroides* measures about 18cm (7in) long and is the only Papua New Guinea red-eyed glossy starling with a fairly short, square tail. The sexes are similar. Adult birds appear entirely black but in the sunlight have an iridescent dark oil-green colouring. The iris is bright red or orange-red and the bill, legs and feet are black. They have a tuneful whistle compared to most other starlings. Immature birds are dull brown with whitish underparts streaked with dark brown. The iris is brown, later becoming lighter until the final adult colour is attained.

This species is very similar to the Philippine Glossy Starling *A. panayensis* but there are one or two subtle differences. Probably the most notable being the longer throat hackles possessed by *A. cantoroides*. In its natural habitat in Papua New Guinea, the Bismarck Archipelago and other islands - extending to the eastern Solomon Islands - the Singing Starling appears mainly around coastal areas, right up to the forest edge but rarely into the forest itself. It can be seen singly, in pairs or large post-breeding flocks. It nests in tree cavities, on cliff faces, and in the roofs of houses, etc., and where sufficient nest sites are available nests colonially, with several pairs occupying the same tree or house roof. Some co-exist within colonies of the Shining, Metallic or Colonial Starling *A. metallica*. Nesting material usually consists of dried grasses and fibres. Two or three pale blue, brownish speckled eggs appear to be the normal clutch. They are very active birds and are known to feed on a variety of fruits, including papaya, *Capsicum frutescens* and the fruit from the *Arecaceae*, plus a few flying insects.

My two extremely flighty birds were obtained 10th May 1992 and the following morning were introduced into a 4m x 2m x 1m (13ft x 6ft 6in x 3ft 3in) flight, which had the rear top, back and sides covered to 1m (3ft 3in). They were the only occupants. It has a shingle floor covering and an ornamental bird bath placed conveniently at the end of the flight to enable the water to be changed regularly. Three large apple tree branches were placed in the flight to provide a variety of perching. At the covered end, I hung a 38cm x 25cm (15in x 10in) nest-box (with a hinged lid), into which was placed dried grasses and coconut fibre.

These birds had previously been fed on some type of softbill food but, not knowing exactly what it consisted of, I gradually introduced them to the mix that I use for all my softbills. It contains eggs, wholemeal flour, soya flour, honey, sultanas, a proprietary egg food, cheese, beef dripping, peanut butter, castor sugar and a yeast extract. Apple, pear and mealworms were also introduced. The mix I prepared was readily taken, as was the apple, but not the pear or mealworms.

After a few weeks they settled down and were soon in perfect condition. They loved to bath several times a day - but only in fresh water. When the sun shone, it made their colouring even more iridescent. While watching them during an extremely warm day, one was observed displaying. It squatted on the perch with its wings partially fanned and fluttering very fast. Whilst doing this, its tail was being fully raised and lowered very slowly. It then began to sing quite melodiously - not the usual down-slurred 'teyeww' - and finished off with what could best be described as a throaty rattle. Meanwhile the other bird started the wing fluttering, accompanied by a little song and, just prior to copulation they stood close together with their heads thrown back and their beaks almost touching. This ended with both birds looking over each other's shoulder, with their cheeks almost touching. As they had been fitted with split rings of different colours it was possible to sex them at the time of copulation. Obviously, the one which had done the majority of the displaying was the male and it was also noted that each bird's song was slightly different. The whole performance was repeated three times within about ten minutes.

It was noted that they took turns of approximately 15 minutes in the nest-box. They would each come out to feed, have a bath, then perch in front of the nest-box and appear to be tapping it. This seemed to be a signal for the bird inside to come out. Occasionally, they would both come out and then return to the nest-box together. Early in June, while topping-up the fruit-fly culture, I noticed that both birds were out of the nest-box. This gave me the opportunity to take a quick look inside. They had made a tidy nest with the dried grasses and coconut fibres and there were three pale blue eggs with brownish speckling confined mainly to the widest end of the eggs.

Later, after an empty egg shell was found on the floor of the flight, a lot of activity started taking place. The male hawked insects - possibly fruit-flies - on the weeds, which by then covered the entire floor to a height of about 1m (3ft 3in). He was also taking one or two mealworms. If a particularly large mealworm was chosen, he would take it up to the highest perch and thrash it against it. After which he appeared to swallow it and fly straight back to the nest-box to feed it to the female, presumably by regurgitation.

Later some mealworms were cut into small pieces, but these were totally ignored. Pear, by this time, was being eaten and the apple completely ignored. At this stage, I decided to give them some waxworms and later one or two were missing. With so little information available about their feeding habits everything was by trial and error.

The birds continued to ignore the apple, but were by then taking nearly half a pear. Again, only one or two mealworms were being taken and about the same number of waxworms. It was also noted that the female appeared to be taking longer turns in the nest-box. For a short period of

time all the softbill mix, pear and mealworms were removed and a dish containing a couple of slices of pawpaw (papaya) and a few waxworms was introduced to see if they would take either of them. During this time they were seen sitting on the top of the fruit-fly bin and judging by their snapping actions were, presumably, taking some of the fruit-flies.

After about an hour the dish was inspected and it was found that they certainly had a distinct liking for pawpaw but the waxworms remained untouched. The dish containing the softbill mix, into which I put 15 small waxworms, plus the halved pear, some chopped apple and the remainder of the uneaten pawpaw was returned to the feeding station. Still the performance at the nest-box entrance continued and the female still appeared, to be taking longer turns inside. As so much seemed to be going on, I decided it would be easier to keep in the birdroom, a daily record of the happenings. So, from then on, detailed records were kept of the amount and variety of food offered and the amount actually taken. This was done by weighing it all on an electronic scale. Details of the times of feeding, the outside temperatures and weather conditions, both mornings and evenings, were also recorded. I found that on average the two birds were consuming 35g of softfood each day, plus 85g of mixed fruits, consisting of apple, pear, pawpaw and grapes. Later elderberries became a firm favourite but mango and kiwi fruit were ignored. All this time there still appeared to be no real enthusiasm for mealworms and the waxworms were now being totally ignored. To try to encourage them to take mealworms, each day several were thrown on to the floor. All these changes in their eating habits seemed to be building up to the hatching of the chicks.

Towards the end of the month the sieve on top of the fruit-fly culture was getting rather messy, so I decided that the whole lot would have to be taken out to be cleaned. On doing so, dozens of mealworms were discovered underneath the container, so obviously they were not eating as many as I had thought. Whilst in the flight I decided to look inside the nest-box; hoping that this would not put off the adults. There, huddled in the right-hand corner alongside an unhatched egg, were two black, reasonably well-feathered, open-eyed chicks, with light coloured beaks. The chicks appeared to be approximately 6cm (almost 2½in) in length. I guessed that they were about ten days old, but with the benefit of hindsight and the knowledge gained from the second clutch, now know that they must have been older - they were probably about 14 - 15 days old.

By the next day the chicks were calling so loudly that they could be heard from about 20m (65ft) away. From then on, naturally enough, food consumption increased. The softfood intake almost doubled and fruit had to be provided twice a day. Small amounts of mealworms were also being taken. Both adults took turns to feed the chicks and to keep the nest free of faeces, though it appeared that the female put in that little extra effort. During their rest-periods both adults took the opportunity to bath and preen



but this came to an abrupt end as soon as the chicks started calling.

The 4th July (American Independence Day) was chosen by the chicks as the day they made their first appearance in the outside world. They just launched themselves into the flight and flew to and fro as though they had been doing so for years. The most striking thing was how big they were - they were about two-thirds the size of their parents. The back and wings were a darkish-brown. The chin to the abdomen appeared to be a fawnish colour with dark brown streaks. The eyes were dark brown and the beak a light fawn with a creamy coloured gape. The tail was a straight, square-shaped affair, albeit a little on the stumpy side.

Everything carried on as normal for a few weeks, until it was noticed that the adults were going through the same performance as before, prior to laying. However, they continued to be first-class parents. On the 14th of the month an egg was discovered but I was not sure whether it was the egg left over from the previous clutch. Three days later there were four eggs in the nest, therefore, one had to be an old one. The first of three chicks appeared on the 19th. It was completely bald and had its eyes closed (they took approximately 14 days to open). The immature starlings were still living in the flight and the adults continued to feed them on demand.

It was noted that although the immatures' eyes were still mainly brown, they were definitely changing to an orange-red and this in turn, it was felt, could have been a stimulus to the male to start gently harassing them. Of course, a more logical reason could have been the maintenance of the new brood. This situation went on for a couple of days, so when all the chicks of the second clutch had hatched, I decided - with some trepidation - that it was time to move the by then self-sufficient immature starlings to a flight adjacent to that of their parents.

A nest-box, similar to that in their previous flight, was placed undercover at the rear. The feeding dishes were all of the same type, as were the drinking and bathing arrangements. After a flighty entrance they found everything they required in a matter of minutes and by late evening had settled down quite nicely. The following day and for about a further week the weather changed dramatically. It alternated between light drizzle and heavy rain but they all carried on quite normally.

On the 14th August, the first of the second clutch left the nest, with its two siblings following the next day. By the time the decision was made to move the second round of immature starlings, the weather broke once again and we had continuous bad weather for about a fortnight but, 15th September, they were moved and like their predecessors, went into their new accommodation quite happily. Between them the five immature birds devoured about 60g (2oz) of softfood a day, plus a selection of chopped fruits (apple, pear, pawpaw, grapes, elderberries and pomegranate). By the end of the month the need to keep daily records was considered unnecessary but any changes, however slight, were recorded. The adults were still in

their own flight and looked immaculate and a week later, a third clutch of eggs was discovered in the nest but these were never hatched.

Early in November one of the immature starlings was found dead in the flight - its death was, I assumed, caused by the plague of cats that we suffer from in this area. When the eldest of the immature birds was caught up, it was noted that a patch of oily-green feathering was breaking through around the lesser and greater wing-coverts and another patch was running down the back, from the nape to the rump.

Ten months later, my immature birds had still not moulted into adult plumage. They remained in perfect condition, as did the breeding adults which had, incidentally, just laid two eggs and were in the process of rearing one chick. I have found it extremely difficult to find anything specific about these most delightful little starlings, but by this time felt far more confident knowing I had a year's experience and a folder full of notes to which to refer and, hopefully, add to.

At 21 days old, the chick was found dead at the bottom of the flight. This really was a bad start to the season but then again, was it too early for them to make a start in such cold and changeable weather? Should I have split up the pair until the weather became more reasonable? Should I have simply removed the nest-box from autumn to spring? These are good examples of not knowing what to do and learning from your mistakes.

Something that was new to me, was to see one of the immature birds flying around with a piece of hay in its beak and trying to pass it through the netting to one of the adults. Is this a sign that it was in breeding condition? Do immature birds pair-up and breed? Apparently, they do pair-up in Papua New Guinea, but it is not known whether they breed.

After a year the first immature starlings still had not achieved their full breeding plumage but were certainly getting the very dark oily-green colour on their mantles. In fact, it was almost 15 months before the first one attained adult plumage. By this time the breeding pair had two more fully-fledged chicks. So, once again, everything was about to happen for the third time, but I now knew that I could handle it all with much more confidence.

### Acknowledgements

I would like to thank David Alderton, Dr Jim Collins and Professor Chris Feare for their help in identifying these birds.

*Don Hunter has been keeping and breeding birds for about 30 years. He is Chairman of The Foreign Bird Association and the Sussex Foreign Bird Association. He is also a Vice-President of the National Bengalese Fanciers Association, and holds positions in several clubs in his home county.*

As described above, the Singing Starling *Aplonis cantoroides* has been bred by D. C. E. Hunter. This is probably the first successful breeding of this species in the UK. Anyone who knows of a previous breeding is asked to inform the Hon. Secretary.

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## FIRST BREEDING RECORDS FOR DIURNAL BIRDS OF PREY IN THE U K

by Dave Coles

Listed below are records covering diurnal birds of prey which I have been able to locate. They are likely to be the most incomplete of any group and any additional references will be most welcome.

### NEW WORLD VULTURES *CATHARTIDAE*

AMERICAN BLACK VULTURE *Coragyps atratus* - 1979 Chessington Zoo  
I.Z.Y. 21:282

ANDEAN CONDOR *Vultur gryphus* - 1982 London Zoo I.Z.Y. 23:7

### HAWKS AND EAGLES *ACCIPITRIDAE*

BLACK KITE *Milvus migrans* - 1864 London Zoo Repts. 1864:21

BRAHMINY KITE *Haliastur indicus* - 1990 Hawk Conservancy  
C.B. 25/8/1989:12

AFRICAN FISH EAGLE *Haliaeetus vocifer* - 1992 National B.o.P. Centre  
C.B. 3/4/1993 suppl:viii

BALD EAGLE *Haliaeetus leucocephalus* - 1986 C. Marler pers. comm.

EGYPTIAN VULTURE *Neophron percnopterus* - 1978 Falconry Centre  
C.B. 28/9/1978:2

INDIAN WHITE-BACKED VULTURE *Gyps bengalensis* - 1982 Anon  
A.M. 1983:4

GRIFFON VULTURE *Gyps fulvus* - 1940 Chester Zoo A.M. 1941:157

RUPPELL'S VULTURE *Gyps rueppellii* - 1991 Whipsnade Wild Animal Park  
C.B. 4/5/1991:2

LAPPET-FACED VULTURE *Torgos tracheliotus* - 1987  
Cotswold Wildlife Park A. Pringle pers. comm.

BATELEUR EAGLE *Terathopius ecaudatus* - 1982 Robin Hill Country Park  
C.B.2/4/1983:6

AFRICAN HARRIER HAWK *Polyboroides typus* - 1991 London Zoo  
F.B.F. Breed. Reg. 1991:6

HEN HARRIER *Circus cyaneus* - 1977 Lunga W.R. A.S.B.R. 1977:16

MARSH HARRIER *Circus aeruginosus* - 1990 Hawk Conservancy  
C.B. 25/8/1990:12



- GOSHAWK *Accipiter gentilis* - 1979 Anon A.S.B.R. 1979:29
- GABAR GOSHAWK *Melierax gabar* - 1991 Unknown  
F.B.F. Breed. Reg. 1991:6
- GREAT/BLACK SPARROW HAWK *Accipiter melanoleucus* - 1984  
Falconry Centre B. Sayers pers. comm.
- SPARROW HAWK *Accipiter nisus* - 1971 Dr. L.H. Hurrell  
C.B.D.B.P. 1971:8
- HARRIS'S HAWK *Parabuteo unicinctus* - Falconry Centre  
Ms. J. Parry-Jones pers. comm.
- RED-SHOULDERED BUZZARD *Buteo lineatus* - 1975 Falconry Centre  
I.Z.Y. 17:272
- RED-TAILED HAWK *Buteo jamaicensis* - 1974 Mr. Horsfield A.M. 1975:47
- COMMON BUZZARD *Buteo buteo* - 1971 R.C. Trout C.B.D.B.P. 1971:8
- ROUGH-LEGGED BUZZARD *Buteo lagopus* - 1981 Falconry Centre  
C.B. 10/4/1982:7
- FERRUGINOUS BUZZARD *Buteo regalis* - 1974 Falconry Centre A.M. 1975:47
- AUGUR BUZZARD *Buteo rufofuscus* - 1906 G.H. Gurney A.M. 1906:360
- TAWNY EAGLE *Aquila rapax rapax* - 1980 Falconry Centre  
Ms. J. Parry-Jones pers. comm.
- STEPPE EAGLE *Aquila rapax nipalensis* - 1982 M. Bignold pers. comm.
- GOLDEN EAGLE *Aquila chrysaetos* - 1975 G. Dangerfield I.Z.Y. 17:272
- VERREAUX'S EAGLE *Aquila verreauxii* - 1992 National B.o.P. Centre  
C.B. 3/4/1993 suppl:viii
- WEDGE-TAILED EAGLE *Aquila audax* - 1982 Welsh Mountain Zoo  
Ratel 11:3:79
- BLYTH'S HAWK EAGLE *Spizaetus alboniger* - 1979 Falconry Centre  
Ms. J. Parry-Jones pers. comm.
- SECRETARY BIRD SAGITTARIIDAE**
- SECRETARY BIRD *Sagittarius serpentarius* - 1988 Marwell/Falconry Centre  
C.B. 25/3/1989:14
- FALCONS AND CARACARAS FALCONIDAE**
- COMMON CARACARA *Polyborus plancus* - 1972 Falconry Centre/Hawk Trust  
A.R. 1972:77
- FORSTER'S CARACARA *Phalcoboenus australis* - 1981 Birdland  
D. Wardell pers. comm.
- AFRICAN PYGMY FALCON *Polihierax semitorquatus* - 1986 Falconry Centre  
National Media
- AMERICAN KESTREL *Falco sparverius* - 1972 Edinburgh Zoo I.Z.Y. 13:298
- MAURITIUS KESTREL *Falco punctatus* - 1991 Jersey W.P.T. A.M. 1993:1
- KESTREL *Falco tinnunculus* - 1849 Rev. J.W. Bower Zoologist 1850:2648
- MERLIN *Falco columbarius* - 1974 Falconry Centre A.M. 1975:47

HOBBY *Falco subbuteo* - Captive bred birds have been advertised during recent years.

NEW ZEALAND FALCON *Falco novaezeelandiae* - 1984 Dr. N. Fox pers. comm.

LANNER FALCON *Falco biarmicus* - 1974 Falconry Centre A.M. 1975:47

PRAIRIE FALCON *Falco mexicanus* - 1984 Welsh Hawking Centre

C.B. 6/4/1985:8

LAGGAR FALCON *Falco jugger* - 1974 Dr. L.H. Hurrell C.B.D.B.P 1974:14

PEREGRINE FALCON *Falco peregrinus peregrinus* - 1976 Anon

ASBR 1976:18

AFRICAN PEREGRINE FALCON *Falco peregrinus minor* - 1986 Falconry Centre

IZN 33:4:20

SAKAR FALCON *Falco cherrug* - 1983 Falconry Centre

Ms. J. Parry-Jones pers. comm.

### Reference abbreviations/sources

A.M. Avicultural Magazine

Hawk Trust Annual Report

A.S.B.R. Avicultural Society Breeding Register

I.Z.N. International Zoo News

C.B. Cage and Aviary Birds

I.Z.Y. International Zoo Yearbook

C.B.D.B.P. Captive Breeding of Diurnal Birds of Prey

Ratel Magazine of the Association of British Wild Animal Keepers

F.B.F. Foreign Bird Federation Breeding Register

Repts London Zoo Annual Reports

Zoologist Periodical published late 19th century

*If you know of any other breeding records, have further information, or would like to buy a copy of Dave Coles' complete list First Breeding Records for Birds Reared to Independence Under Controlled Conditions in the United Kingdom, you can write to him at:- 2 Church Farm Cottages, Lower Basildon, Berkshire RG8 9NJ.*

## A BIRD IN THE DOVECOTE IS WORTH TWO IN THE BUSH

by David Atwell

It is hard to believe that in the recent past a regular supply of fresh meat was a rare occurrence. The luxury of a fridge or a domestic freezer was unheard of and there were not the techniques available to preserve food for long periods after its production. The name of the game was self survival centred on home grown produce and the availability of seasonal treats from nature's larder.

In medieval England the manorial unit was governed by a strict set of laws and rights which filtered down from the lord to the lowly cotter, ensuring that the landed gentry derived maximum benefit from their tenants. This enabled them to develop a lifestyle in which food production methods generated a supply of fresh meat all year round and provided a welcome relief from salted beef. In most cases this included the provision of fish such as carp and eels reared in stew ponds and other alternative systems including deer parks and rabbit warrens. Without doubt however the most numerous and popular choice of meat was that of the humble pigeon, cultivated and lovingly cared for in purpose built houses.

The right to keep one of these special houses was limited by law up until 1500 and clearly restricted the privilege to manors and ecclesiastical fiefs. This feudal right was attached to the role of the baron, abbots and lords of the manor and was latterly extended to the parish priest. This might explain why the dovecote at Dunster in Somerset is thought to be contemporary with the church (c. 1150) according to the church guidebook (9th edition, 1966). The social importance placed upon fresh meat was highlighted by Olivier de Serres in 1600 in his book on agriculture and husbandry, when he wrote: *'No man need ever have an ill provisioned house if there but be attached to it a dovecote, a warren and a fishpond wherein meat may be found as readily at hand as if it were stored in a larder. Certainly a vast pigeon and rabbit pie is a most useful standing dish in a country house both for members of the family and for chance droppers in, and then if properly managed there will always remain somewhat to sell over and above what is consumed at home'*.

The importance placed upon the Culverhouse and its feathered inhabitants naturally afforded status to the bird as well as the building. A common misconception amongst the peasantry was that the Lord's voracious pigeons were responsible for damage to their crops. Most of this predation was presumed rather than proved because the birds picked up only spilled grain and fed primarily on weed seeds and on small molluscs. However such was the power of the landed classes that in the reign of Edward II (1314-1315) the taking of a bird was punishable under a Law of 7.



The feral pigeon of today is descended largely from the original dovecote inhabitants bred extensively in the medieval period. These birds are assumed to have originated from the Rock Dove *Columba livia*. Throughout its history this humble bird has been valued for a number of domestic and social purposes ranging from the practical to the sublime. As an example, in the medieval period a widely recommended remedy for baldness involved mixing the bird's dung with watercress and applying it to the scalp in the form of a warm ointment. Perhaps even more distasteful was a remedy endorsed by Pliny during the Roman period (P. & G. Hansell), whereby its blood was said to cure bloodshot eyes. A live one cut in half and applied to the soles of the feet was said to cure melancholy or madness. It was a remedy which would surely have confirmed madness rather than cured it!

The versatile pigeon had a variety of uses other than its primary table function. Each by-product produced from the birds, ranging from the feathers to dung, was of great value. Surplus plumage was used to stuff pillows and beds and was thought to extend the life of the lucky recipients. Similarly the dung was perceived as a valuable commodity, an interesting contrast to the modern day menace of pigeon droppings in city centres. In Kent, for instance, one cart load was said to be worth at least ten times that of any other dung, and even the tanning industry found it an aid to softening leather.

The pigeon was also exploited for its sporting value. Many dovecotes provided quarry for the mediaeval field sport of falconry whilst in recent centuries they delivered the entertainment for shooting matches. However their main resurgence into the sphere of domestic social life has been through the sport of pigeon racing and fancying which is still a popular pastime as we approach the millennium. Who would have ever thought that single birds would exchange hands for the vast sums that they do today, on an international, as opposed to parochial level?

The British Isles displays a multitude of dovecotes, columbaria or 'culver houses' (Culver is Anglo-Saxon for pigeon) dependant upon your preferred choice of name. The Jacobean traveller, Fynes Maryson is noted for stating that: '*no kingdome of the Worlde hath so many Dove-houses*'. Certainly their form and colloquial style is varied and diverse, ranging from the humble Cornish structures to the elaborate and flamboyant cotes of Oxfordshire and the Home Counties. It is estimated that by the 17th century there were 26,000 such structures in England alone, with a figure nearer 30,000 for the whole of the British Isles. With an average of 700 nesting holes this would mean that approximately 20 million pigeons were being reared in these purpose built houses. In the Duchy (of Cornwall) however we have only about 100 references to dovecotes in the county although we can assume that there were probably many more.

The most common style of dovecote comprises a circular tower although

you can also find square and rectangular forms. These narrow at the top to leave an access hole or louver (also called a glover) usually covered by a slate or cupola to keep out driving rain. The arrangement of the roof varies in shape and design according to custom and available materials. In Cornwall most of the dovecotes are made from slate stone and have corbelled roofs (a 13th or 14th century feature of English cotes) although a magnificent granite example survives at Bussow Vean near Towednack. The walls are usually of dry stone construction and can be unusual in that some contain 'through holes' allowing direct access to the interior. This is a unique feature to the Duchy with only one other similar example in west Wales.

The location of the building was an important consideration and some were placed a great distance from the main house to avoid the birds pilfering from the garden. Conversely however others abutted the property and it would appear that a primary consideration was the availability of water and shelter. There was a general feeling in the medieval period that disturbance or noise would upset the pigeons and encourage them to leave the cote. Great pains were therefore taken in selecting suitable sites.

Access to the dovecote is through a low stepped wooden doorway which prevented vermin from entering and retained any dung. Inside the nesting holes are arranged in alternate courses. They usually begin at a suitable height above ground level and in some cases, such as at Lamorran, possess shallow slate sills. Unlike those outside of Cornwall, most of the nesting holes are rectangular in plan, some with a slightly splayed interior, although classic 'L' shaped examples (*'so that your bird sits dark and private'* Hansell, P.J.) exist at Rosteaue and in the remnants at St. Michael Penkevil. Interestingly, the average number of nesting holes per cote (about 250) is considerably smaller than that in the rest of the country, where 500-1,000 is more usual. However this in itself can be misleading when calculating the number of birds. There appears to have been a general assumption that three nesting holes were required for every two pairs of breeding birds.

The feral pigeon is an active and productive bird which mates for life. Each pair within a dovecote could be relied on to breed for up to seven years and were capable of producing at least two squabs (unfledged young) every six weeks. These grew quickly and could attain 1lb (453g) in weight within three weeks, thus testifying to the richness of 'pigeon milk'. This half-digested food produced by the adults was incredibly cost effective, when one considers that most of their diet was accrued from the wider countryside. Indeed, only a small amount of grain was fed to them by their owners to encourage them to return to the cote and to supplement their diet in poor weather. However, there is some evidence that in parts of England artificial food was prepared by 'professional chewers', who partly ground grain for the delectation and delight of their feathered friends.

The unsuspecting squabs were usually harvested at four weeks of age, prior to the development of their pin feathers and the desire to fly. This avoided the birds gaining flight muscles and ensured that they were at their most succulent when presented at the table. Such a management regime meant that a pair of birds laying two eggs at a time were capable of producing 14 squabs a year. When you extrapolate this to the average size of an English dove-cote (with up to 1,000 holes) about 200 squabs a week could have been produced. However, in a Cornish context (with 150 - 250 nesting holes per cote) perhaps 30 - 50 squabs would be more realistic.

The general day to day maintenance of a dove-cote rarely required a full-time employee. Great care was however taken in settling the birds into their new home and they were usually confined inside for a short while to avoid them straying. This also allowed them to pair and mate, strengthening the bond between the birds and the building. Stock was procured from some distance away, even from as far afield as France, to lessen the chance of the pigeons returning to their old lofts.



*David Atwell*

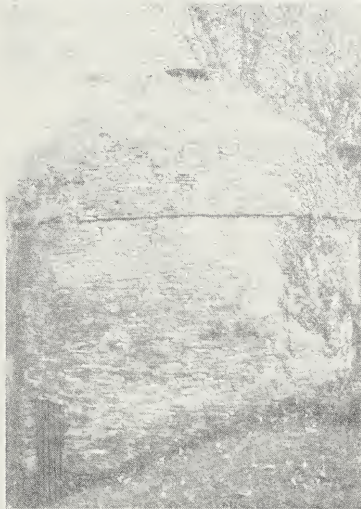
**The Halwyn dove-cote was first recorded in a written deed dated 1347**

The interior walls of some dove-cotes in Cornwall were clearly whitewashed although one can imagine that the birds themselves might have contributed to this aspect of building maintenance. Access to the nesting holes was gained by means of a 'potence' (derived from the French term for gallows) which must have been a technological boon in its day. A stout central pole was carefully pivoted from above and below, and ladders could subsequently be attached to lateral arms. This enabled all the holes to be cleaned systematically whilst providing the option for further attachments such as alighting platforms. These encouraged birds to mate within the cote. Regrettably no original examples survive in Cornwall although a classic example can be viewed at Dunster in Somerset.

In Cornwall it would appear that a certain amount of superstition developed around the dove-cotes and their ability to trap wayward spirits.



A reference by T.W. Cleave (O.C. 1937) to Trevanion Culverhay near Wadebridge noted that nine of the nest holes in the second row had been carefully blocked in. He summarised that these were at the level of a kneeling person's head and that the closed holes might represent the '*the custody of exorcised spirits*'. This unusual statement appears to be backed up by Charles Henderson (Essays, 1935), who made reference to the vicar at Penwarne in Mawnan, who along with fellow 'ghost layers' (ghost busters!) was active in the 18th century. They apparently used whips to drive the evil spirits into the holes before carefully sealing them.



*David Atwell*

**A classic example of a Cornish dovecote at Tintagel. It has small slate stone walls and still retains its original louvre.**

The North Cornwall Heritage Coast and Countryside Service has recently been involved in a restoration project on a dovecote at Halwyn, near St. Issey. The structure is the oldest known cote in Cornwall and was referred to in a deed dated 1347. It now stands as a semi-circular ruin and has been carefully stabilised with a special grant through English Heritage's Monument Management Fund. The work was undertaken by a local mason with support and help from the landowners and a number of bodies in the North Cornwall area. In addition to this fine example there are two others which are worthy of mention. The first (also restored recently) is at Trevanion near Wadebridge and the other, which still retains its original louvre, is in the vicarage garden at Tintagel.

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## CHESTER ZOO BIRD REVIEW 1996

by Roger Wilkinson

Highlights of the 1996 breeding season at Chester Zoo were our first successful breedings of Pink Pigeon *Columba (Nesoenas) mayeri* and Blue-throated Conure *Pyrrhura cruentata*. Other important breedings included Red-crowned Cranes *Grus japonensis*, West African Crowned Cranes *Balearica pavonina pavonina*, Congo Peafowl *Afropavo congensis*, Wrinkled Hornbill *Aceros corrugatus*, Red-fronted Macaws *Ara rubrogenys*, Lilacine Amazons *Amazona autumnalis lilacina*, Green-cheeked Amazons *Amazona viridigenalis*, Cuban Amazons *Amazona leucocephala*, Blue-eyed Cockatoos *Cacatua ophthalmica*, Yellow-throated Laughing Thrushes *Garrulax galbanus* and Bali Starlings *Leucopsar rothschildi*. Not to be forgotten was the rearing of a record 25 Humboldt's Penguins *Spheniscus humboldti* in the summer of 1996.

Exciting new arrivals at Chester Zoo in 1996 included White-naped Cranes *Grus vipio*, Masked Plovers *Vanellus miles miles*, Orange-fronted Fruit Doves *Ptilinopus aurantiifrons*, Green Wood Hoopoes *Phoeniculus purpureus*, Red-winged Laughing Thrushes *Garrulax formosus*, Blue Whistling Thrushes *Myiophonus caeruleus*, and a handsome male Spangled Cotinga *Cotinga cayana*. Less exciting to look at but conservationally important newcomers were pairs of Meller's Ducks *Anas melleri* and South Georgia Pintails *Anas georgica*.

The White-naped Cranes, a sibling pair, came to us from Jersey Zoo. We shortly expect to receive from Whipsnade an important but old wild caught male to pair with the young egg-laying female. Whipsnade's male is under-represented in that he only has one surviving youngster. Although he has not fertilised an egg for ten years we have agreed to try him with our young female for perhaps a couple of seasons in the hope that a change of scenery and mate might prove re-invigorating. We are facing the opposite problem with our Red-crowned Cranes *Grus japonensis*. Since 1991 they have bred every year with a total of nine chicks now bred from this pair. The majority have proved to be females and it is already difficult to find unrelated males to pair with these youngsters. The EEP breeding programme recommends slowing down or terminating breeding by this pair and we are now looking to the future in seeking to establish a pair of rare Siberian Cranes *Grus leucogeranus* at Chester. After several years without breeding we are happy to again report breeding West African Crowned Cranes *Balearica pavonina pavonina*. Two chicks were hatched and foster-reared by bantams in 1996. Because of our past experience of sibling aggression between recently hatched chicks, each crane was hatched under its own bantam foster mother. When the oldest chick was 17 days old and the youngest 15 days old they were introduced together in a large

enclosure along with their bantam fosters. This proved successful and after another month the bantams were removed.

The Sun Bitterns *Eurypyga helias* built a superb nest and despite the fact that both birds are believed to be over 25 years old, eggs were laid. However, despite calcium supplementation all were soft-shelled. New research on Little Black Bustards (Korhaan) *Eupodotis afra* has indicated that the white-winged form, previously considered a race, should now be treated as a full species, the White-winged Black Korhaan *Eupodotis afraoides*. Although we had fertile eggs at Chester in 1996, none hatched and our male died in the winter. We now have two females, mother and daughter, and would like to hear from anyone who could offer a male, perhaps in exchange for one of the females.

Crowned Plovers *Vanellus coronatus* again reared chicks. We are grateful to Raymond Sawyer for the pair of Masked Lapwings and to Dr Martin Bourne for a pair of Blacksmith Plovers *Vanellus armatus*. The Masked Lapwings now grace the floor of the aviary holding one of our pairs of Tawny Frogmouths *Podargus strigoides*. Although four Tawny Frogmouth chicks were hand-reared in 1995, only one chick was hatched in 1996 and this failed to survive. Two White-faced Scops Owls *Otus leucotis*, two Spectacled Owls *Pulsatrix perspicillata*, three Snowy Owls *Nyctea scandiaca* and five Barn Owls *Tyto alba* were reared. After several years with no sign of breeding from our Great Grey Owls *Strix nebulosa* it was decided to have these surgically sexed. Our 'pair' proved to be two females so we are now looking to exchange one of these for a male. The Ferruginous Pygmy Owls *Glaucidium brasilianum* laid fertile eggs but no chicks were hatched.

Our pair of Congo Peafowl *Afropavo congensis* laid four clutches in 1996. The first two clutches were taken for artificial incubation. One chick hatched from the first clutch but died at three days old. Two chicks which hatched from the second clutch were fostered to a bantam and one was successfully reared. Three chicks were hatched from the third clutch under their natural parents but none survived. A fourth clutch was hatched under a bantam in November and these have been photographed each week in order to provide a photographic record that may assist the ageing of wild chicks by field researchers in Zaire.

One Edwards' Pheasant *Lophura edwardsi* and three Satyr Tragopans *Tragopan satyra* were parent-reared. A further three Satyr Tragopans, six Golden Pheasants *Chrysolophus pictus*, a Red-legged Partridge *Alectoris rufa* and a Bare-faced Curassow *Crax fasciolata* were reared by hand or under fosters. Grey-headed Chachalacas *Ortalis cinereiceps* hatched a chick in the free-flight area of the Tropical House but this was not reared. Blyth's Tragopan *Tragopan blythii* and Mountain Peacock Pheasants *Polyplectron inopinatum* laid for the first time but neither hatched chicks.



Every breeding season begins with high expectations further heightened when courtship and nest-building are seen. Such highs are always followed by lows when either eggs are not laid, eggs prove infertile or fail to hatch or chicks hatch but die during rearing. We came close to breeding from our pair of Blue Crowned Pigeons *Goura cristata* when a chick hatched in the incubator and fostered under Java Doves *Streptopelia risoria* survived for five days but died before we were due to switch it to a commercial hand-rearing diet. We artificially incubated and subsequently hand-reared a Nicobar Pigeon *Caloenas nicobarica*. This was the first pigeon we have successfully hand-reared from hatching. Not all our hand-rearing was successful however, a Scarlet Ibis *Eudocimus ruber* chick (the first to be hatched at Chester) was lost at three days old.

Fourteen Waldrapp Ibis *Geronticus eremita* were parent-reared. However, we are still trying to determine the conditions necessary for our Humboldt's Penguins to consistently parent-rear. Only two of 12 chicks hatched in July and left under their parents were reared to independence whilst of 23 taken for hand-rearing in April and May, all were reared successfully. Two pairs of penguins laid repeat clutches in November, of these to date, four have hatched (and been left with their parents) bringing the number of hatchings this year to a record 39. Twenty youngsters have already travelled to Jurques, France, to establish a new zoo colony. However, again success has bred its own problems and it has been suggested that Chester's penguins are now over-represented in other zoos. As such it is likely that for 1997 at least our policy will be to only rear chicks under their parents. Hopefully we may obtain some under-represented genetically important stock from elsewhere and then concentrate our efforts on breeding from them.

Six Caribbean Flamingos *Phoenicopterus ruber ruber* and three Chilean Flamingos *Phoenicopterus chilensis* were reared successfully in 1996. Since 1990 our Chilean flock has increased by breeding from 28 to the present 42. Over the same period the Caribbean flock has increased from 42 to 55. In that time totals of 21 Chilean and 28 Caribbean Flamingos have been reared at Chester but the recent higher adult mortality of the Caribbean Flamingos has counter-balanced their greater birth rate.

Hawaiian Geese *Branta sandvicensis*, Red-breasted Geese *Branta ruficollis* and Emperor Geese *Anser canagicus* were all allowed to rear their own youngsters. Other successful waterfowl breedings included Black-necked Swans *Cygnus melanocoryphus*, Black-billed Whistling Ducks *Dendrocygna arborea*, Ruddy Shelducks *Tadorna ferruginea*, Chiloe Wigeon *Anas sibilatrix*, Ringed Teals *Callonetta leucophrys*, Rosy-billed Pochards *Netta peposaca*, Mandarin Ducks *Aix galericulata*, Carolina Wood Duck *Aix sponsa* and North American Ruddy Duck *Oxyura jamaicensis*.

Chester achieved the first UK breeding of the Pied Imperial Pigeon *Ducula bicolor* in 1964 but breeding was not repeated at Chester again until this year when two chicks were reared by one of two pairs in the free flight area of the Tropical House. The parents were bred at Paignton Zoo and had made numerous unsuccessful attempts at breeding since their arrival at Chester in 1991.

Other pigeons bred included Speckled Pigeons *Columba guinea*, Rock Doves *Columba livia*, Crested Bronzewings *Ocyphaps lophotes*, Common Bronzewings *Phaps chalcoptera* and Diamond Doves *Geopelia cuneata*. Luzon Bleeding Heart Pigeons *Gallicolumba luzonica* and Superb Fruit Doves *Ptilinopus superbus* hatched chicks but this year none were reared successfully.

Three Blue-eyed Cockatoos *Cacatua ophthalmica* were hand-reared and a fourth parent-reared. Vogelpark Walsrode now joins Rotterdam Zoo, Paignton, Paradise Park, Tierpark Berlin and Loro Parque as collections receiving birds from Chester to assist the European Studbook programme for this rare cockatoo. We were fortunate to be able to exchange one of our male White-tailed Black Cockatoos *Calyptorhynchus latirostris* for a female from Rotterdam Zoo. Although not as colourful as the Red-tailed Black Cockatoo *Calyptorhynchus magnificus* we made the decision to favour *latirostris* in that the latter is presently of greater conservation concern. *Calyptorhynchus latirostris*, recently upgraded from a race of *Calyptorhynchus funereus* to a species in its own right, has given us considerable naming problems. Although *latirostris* and *funereus* are still popularly grouped together as White-tailed Black Cockatoos, the most recent Birdlife International checklist of endangered birds refers to *latirostris* as the Slender-billed Black Cockatoo, restricting the name White-tailed Black Cockatoo to the closely related *baudinii*. This has caused some confusion; *latirostris* has a stumpier bill than *baudinii* and is also referred to as the Short-billed Black Cockatoo or Carnaby's Black Cockatoo. Hopefully these name changes will soon be sorted out but until then it is safest to always use the scientific name when referring to these black cockatoos.

We were very sad to lose our male Palm Cockatoo in 1996 and are currently seeking a new partner to join the female which showed every sign of breeding, spending lengthy periods in the nest until the death of her partner. A mate has now been found for our female Red-vented Cockatoo *Cacatua haematuropygia* and other new arrivals include a female Kea *Nestor notabilis* from New Zealand. This bird formed part of a group recently imported into the UK thanks to negotiations by the European Studbook Keeper at Bristol Zoo. Our previous female was earlier in the year moved to Bristol's Kea colony where she was delighted to re-encounter her previous mate. Partner choice is important in birds and lovelorn parrots can stubbornly ignore the choices made for them by breeding programme

computer dating. Red-fronted Macaws *Ara rubrogenys* again reared five chicks in a single brood and one Blue and Yellow Macaw *Ara ararauna* was bred. Two Thick-billed Parrots *Rhynchopsitta pachyrhyncha* and a Yellow-naped Macaw *Ara auricollis* were hatched but unfortunately were not reared. We were more successful in breeding two Blue-throated Conures *Pyrrhura cruentata*, four Slender-billed Parrakeets *Enicognathus leptorhynchus*, three Derbyan Parrakeets *Psittacula derbiana*, three Greater Vasa Parrots *Coracopsis vasa* and one Eclectus Parrot *Eclectus roratus vosmaeri*. Lories presented a particular problem in 1996 in that most were either not in pairs or in recently established pairs. We have recently received two Mount Apo Lorikeets *Trichoglossus johnstoniae* and are looking forward to working with this species in 1997.

Four species of touraco are held at Chester and all four were bred in 1996. Two White-cheeked Touracos *Tauraco leucotis* and two Violaceous Touracos *Musophaga violacea* were parent-reared and two Red-crested Touracos *Tauraco erythrolophus* and one Schalow's Touraco *Tauraco schalowi* hand-reared. Trumpeter Hornbills *Bycanistes bucinator* again reared two chicks to make a total of 17 youngsters reared by this pair since their first breeding in 1989. However the African Grey Hornbills *Tockus nasutus epirhinus* which had been so successful in previous years, this year failed to rear chicks from two nesting attempts. The Great Indian Hornbills *Buceros bicornis* again nested unsuccessfully and at the end of the year a new female, on loan from Avifauna (Holland) was received and has been introduced to the male. The re-pairing of the Rhinoceros Hornbills *Buceros rhinoceros* in 1995 did not lead to any breeding attempts in 1996 but we remain hopeful for 1997. Last but not least the Wrinkled Hornbills *Aceros corrugatus* reared one youngster in 1996. Nearly six months after fledging this is still being fed by both parents and has not shown any inclination to become independent.

Lilac-breasted Rollers *Coracias caudata* were bred for the first time at Chester in 1996. Four chicks were reared but the female parent killed the male shortly before the chicks fledged. She then continued to rear the chicks and showed no aggression towards the Congo Peafowl sharing the aviary. Red-billed Blue Magpies *Urocissa erythrorhyncha* reared their own chicks but although eggs were laid no Choughs *Pyrrhocorax pyrrhocorax* or Azure-winged Magpies *Cyanopica cyana* were reared.

Superb Starlings *Spreo superbus* and Asian Glossy Starlings *Aplonis panayensis* reared chicks and one Royal or Golden-breasted Starling *Cosmopsarus regius* was successfully hand-reared. Ten Bali Starlings *Leucopsar rothschildi* were bred from one pair by a combination of parent and hand-rearing. After several years of unsuccessful breeding attempts by the Yellow-throated Laughing Thrushes *Garrulax galbanus* it was decided to remove eggs for artificial incubation and attempt hand-rearing.



This proved successful with three chicks being hand-reared from the eggs.

Other softbills bred in 1996 include Plumbeous Redstarts *Phoenicurus fuliginosus*, White-rumped Shamas *Copsychus malabaricus* and Pekin Robins *Leiothrix lutea*. We have small groups of both Pekin Robins and Silver-eared Mesias *Leiothrix argentea* in the free-flight of the Tropical House and were surprised when the chick reared by the mesias proved to be a hybrid between these two species. No breeding association was noted between Silver-eared Mesias and Pekin Robins and only mesias fed the hybrid chick.

Mexican House Finches *Carpodacus mexicanus* again reared youngsters in the finch flight but although Gouldian Finches *Chloebia gouldiae* and Cordon Bleus *Uraeginthus bengalus* both hatched chicks none were reared. Two Java Sparrows *Padda oryzivora* fledged in the Tropical House at the year end. It may come as a surprise that the Java Sparrow *Padda oryzivora* is now listed as a threatened species. Massive population declines in Indonesia have been attributed to over-exploitation for the cage bird trade. Hopefully their wild populations may recover with the reduction in trade of wild caught birds which captive breeding should be encouraged to replace.

## LONDON ZOO NOTES

by Simon Tonge

Work is continuing in the zoo's Bird House and, as the standard of exhibits rises, so a number of new and interesting species can be added to the collection. Arrivals include White-rumped Shamas *Copsychus malabaricus*, Magpie Robins *C. saularis*, White-crowned Robin Chats *Cossypha albicapilla*, Plumbeous Redstarts *Phoenicurus fuliginosus* and Mindanao Bleeding-hearts *Gallicolumba criniger*.

Other additions are Emus *Dromaius novaehollandiae*, Waldrapp Ibis *Geronticus eremita*, Roulrouls *Rollulus roulroul*, Superb Tanagers *Tangara fastuosa*, Hyacinthine Macaws *Anodorhynchus hyacinthinus*, Fire-tufted Barbets *Psilopogon pyrolophus* and a Blue Crowned Pigeon *Goura cristata*.

Three species bred at the zoo for the first time in 1996: Black-faced Ibis *Theristicus melanopis*, White Woodpecker *Melanerpes candidus* and Rothschild's Mynah *Leucopsar rothschildi*, a species which has been in the collection since 1982. A Red-billed Hornbill *Tockus erythrorhynchus* was hatched and hand-reared, and has now joined the zoo's Events Team.

The waterfowl collection has been revised and widespread Eurasian species have been replaced with threatened ones such as Marbled Duck *Marmaronetta angustirostris* and Ferruginous Duck *Aythya nyroca*.

A major new exhibit due to open in May 1997 will be on the Mappin Terraces where Sloth Bears, Entellus Langurs and Muntjac will co-exist with Peafowl and various waterfowl.

## THE SOCIETY'S VISIT TO FLAMINGO GARDENS AND ZOOLOGICAL PARK

by Stewart Pyper

On Saturday 21st September, the Avicultural Society visited Flamingo Gardens and Zoological Park at Weston Underwood, Nr. Olney, Bucks. It was the Society's first visit to the park, which is owned by Christopher Marler, who was recently elected a Vice President of the Avicultural Society. It was a beautiful early autumn day and with almost 50 members and friends in attendance, it was obvious that those present appreciated visiting this venue.

In recent years small portable metal aviaries have appeared on the market and these house an expanding collection of Australian parrakeets, lovebirds and Ring-neck mutations, including a beautiful flock of 15 lutino Ring-necks. The wall aviaries house the softbill collection, with many interesting species, including Royal or Golden-breasted, Emerald and Long-tailed Starlings, White-crested, Red-winged and Black-throated Laughing Thrushes, touracos and toucans. Christopher Marler showed us around and pointed out the various exhibits and told us many interesting little stories concerning them. The striking American Bald Eagle was a centre of attention and he proudly explained that 17 young have been parent-reared since he achieved the UK first breeding with this species in 1986.

The park is home to the Pelican Trust and the collection includes two beautiful groups of White and Pink-backed Pelicans kept full-winged in 100ft x 12ft high (approx. 30.8m x 3.7m) aviaries and are seen at their best when having the freedom to fly. The breeding group of Greater Flamingos was also admired. The waterfowl collection which is known the world over, has many unusual breedings to its credit and has always held centre stage in this varied collection. The park is also home to a large number of peafowl and varieties of domesticated poultry. Although birds form the bulk of the collection, there is also a number of impressive animals, including American Bison, Congo Buffalo, Yak and white wallabies.

Members were honoured and privileged to be allowed to see Christopher Marler's private museum and art gallery. The pictures are mainly originals and generally of birds. Christopher has had mounted several of the choice birds which he has kept over the years. These include both Scarlet and Orange Cocks-of-the-Rock, three Royal or Golden-breasted Starlings, Azure-winged Magpies and a selection of parrots. There are also two small glass cases, one of which contains among other species, a Lesser Bird of Paradise and the other a collection of choice South American nectar-feeders and softbills. Most imposing is a third cabinet, which came from a private house and must be over 125 years old. This houses all the British gamebirds of the 19th century - and a Bob White Quail!

## BOOK REVIEWS

### Munias and Mannikins

Anyone with an interest in the *Lonchura* will, I am sure, have been aware for sometime that Robin Restall was in the process of writing a book on these birds. That publication was eagerly awaited is something of an understatement as of all of the titles published during the past few years, Robin Restall's book has to be one of the titles I, as a bookseller, have received the most enquiries regarding its publication date. It appears it took the author five years to write the book. When one takes into account the wealth of detail included in the text and that he also illustrated the book, I am not in the least surprised that it took the time it did to complete.

The actual title is in fact *Munias and Mannikins* and it is published by Pica Press at £28.00. There are some 264 pages with 16 coloured plates at the front of the book and 64 plates at the rear. The 16 plates are of perched birds painted in 'field guide' style, depicting every known plumage. For quick easy identification purposes, these plates are ideal, showing details of adult and immature plumage and in certain cases, first-year plumage also, of all known species and races. The 64 colour plates (at the rear of the book) are measured drawings of individual birds showing plumage differences. The detail in these plates is outstanding and each plate will, I am sure, be pored over time and time again by *Lonchura* enthusiasts. The numerous line drawings found throughout the text are a delight. Indeed I find them as interesting as the colour plates. Many of these drawings show behaviour patterns never before illustrated or described. Distribution maps are also included.

The detailed text (for each species and race) includes field characters, status (in the wild), habitat, habits and behaviour, food and feeding, call-notes, song, courtship and display, breeding, conservation (where applicable) and descriptions of adult males and females, plus notes on juvenile plumage. In the chapter Natural History of Munias and Mannikins, the author gives a brief overall view of the genus *Lonchura*. When discussing the nesting habits of these birds, Goodwin (in *Estrildid Finches of the World*, 1982) is quoted as offering the hypothesis that many estrildids not presently known to do so, may occasionally make use of other species' nests. The author mentions that he personally has found only one example of this practice, namely in Bali where the White-headed Munia *L. maja* had taken possession of the nest of a Streaked Weaver *Ploceus manyar*. Van Someren (1956) in *Days with Birds - studies of habits of some East African species*, described how the Rufous-backed Mannikin *L. bicolor nigriceps* takes over old weaver nests in which to roost. Van Someren also described how Silverbills *L. cantans* will take over old weaver nests and rear young in them.



It is obvious that Robin's book will remain the definite work on the *Lonchura* for many years to come. Indeed I cannot see it ever being superseded. With such a wealth of detail, it would no doubt prove difficult to even find new information for a second edition.

For anyone with an interest in munias and mannikins, the book is a must. The information (both in the plates and the text) on the many races will prove invaluable to the aviculturist who wishes to identify the birds in his or her possession and will hopefully enable many breeders to pair like to like. For those who import *Lonchura* species, the book provides all the information required for correct identification.

**Anthony J. Mobbs**

*Munias and Mannikins* is available, price £29.50 post paid, from A. J. Mobbs, 65 Broadstone Avenue, Walsall, West Midlands WS3 1JA, England.

### **Cranes: Their Biology, Husbandry, and Conservation**

Editors David H. Ellis, George F. Gee, Claire M. Mirande

Published by Hancock Wildlife Research Center ISBN 0-88839-385-7 and National Biological Service/ International Crane Foundation Edition ISBN 0-88839-387-3

This must be the book for all wishful 'Grus gurus', concerned for crane care and with their propagation in captivity. Though published and printed in 1996, it is of interest to the reviewer to note that the Foreword was written by Sir Peter Scott, way back in 1988: he died in 1989. One cannot help but wonder how much of the contents he saw before agreeing to the use of his name!

However, little appears to have been lost by this delay; it just emphasises the time it takes to assemble people and material to put together a book of this kind. Included is information on topics such as reproduction physiology, artificial insemination, incubation, rearing and behaviour management, as well as essential priorities for the long term, including genetic management and record keeping. Not that its interest is exclusively on maintenance in confinement; there are sections dealing with the status of all 15 species in the wild, with useful distribution maps and interesting sections dealing with re-introductions. There are 13 chapters which include Crane Biology, through to Ecology, Status and Conservation.

However, this is a manual. With the names of staff and research officers from Patuxent Wildlife Center and the International Crane Foundation,

Baraboo, Wisconsin to the fore, one is right to expect a wealth of well recorded practical experience and research. It is tempting to pick the book up and attempt a one sitting read, but that would be a mistake, there is too much to digest.

Inevitably this production has an American bias. There appears to be little reference to experience in Britain or continental Europe with the exception of that at Walsrode. There are tables for example for ambient temperatures at which warm climate cranes should be moved indoors and supplied with supplemental heat. So, if you keep Sarus or Wattled Cranes, they should be brought indoors at  $-20^{\circ}\text{C}$ , and given heat at  $-30^{\circ}\text{C}$  in the case of the Sarus Crane, and at  $-40^{\circ}\text{C}$  in the case of the Wattled Crane - thank goodness for the equable British climate. Both species of Crowned Crane are treated equally, with the recommendation that they are kept in and given heat from  $0^{\circ}\text{C}$ , whereas we in Britain tend to give only *Balearica pavonina* special consideration in winter.

The chapter on chick rearing includes much of use including the mitigation of foot and toe deformities. New to me is the thought of exercising chicks by swimming. Swimming, being less stressful to most chicks, requires less time than walking for similar benefits. There are also some useful observations which may have a practical application to even small time keepers of cranes. It is generally acknowledged that for a pair of cranes to be successful in breeding the male should be conspicuous by his larger size and obvious dominance. Under 'Behaviour management' a tip given for those who have a pair of cranes where the male is on the small side and is deferential to his intended breeding partner is to build mounds of earth on which he can stand - his dominance can thereby be increased.

There are useful appendices particularly the one on equipment, but again it is mostly of American origin e.g. incubators, with no mention of two well known British manufacturers, transponders, sexing labs, suppliers of rings - sorry bands - in this case both North American and British.

'Cranes' will reside alongside my Walkinshaw, 1973 and Johnsgard, 1983. Though essentially an avicultural manual it complements and updates my knowledge on the status and conservation of cranes worldwide too. It is a most welcome addition to the book shelf of the zoo professional and serious birdkeeper alike.

**Joe Blossom**

## NEWS & VIEWS

### NEW STUDBOOK FOR THE BLUE-THROATED MACAW

The Blue-throated Macaw *Ara glaucogularis* has become the latest endangered species to become the subject of an international studbook. A petition to extend the existing European regional studbook was made following the 1996 meeting of the Taxon Advisory Group for parrots at the annual EAZA/EEP meeting held in France at the end of June. Currently a regional studbook for Europe, coordinated by Loro Parque, has been run as part of the EEP scheme for the Blue-throated Macaw. The application for the international studbook was made jointly by Roger Sweeney, the Curator at Loro Parque and Alan Hesse, the biologist coordinating the current field conservation work for this species in Bolivia. The application received official endorsement by both the IUCN/SSC and the IUDZG-WZO. Every aviculturist who keeps this species should ensure that their birds are registered, so that for the first time a clear idea can be obtained of the true status of the Blue-throated Macaw in captivity. It is feared that the wild population may now number only 100 birds or less.

\* \* \*

### LONG-TAILED ROSEFINCH BRED IN SOUTH AFRICA

Following his successes with the Pink-throated Twinspot *Hypargos margaritatus* and the Grey-headed Olive-back *Nesocharis capistrata*, Chris Koen has now succeeded in breeding the Long-tailed Rosefinch *Uragus sibiricus*. The pair showed no interest in breeding when kept in an aviary with various similar sized finches. It was not until they were moved to a large cage that they nested. Their first attempt was unsuccessful, but three months later, from a clutch of four eggs, one youngster was raised. The incubation and fledging periods were both 13 days.

\* \* \*

### BIRDWORLD HAS NEW OWNERS

Birdworld at Farnham, Surrey, has new owners. Opened to the public 15th June 1968, it was for the following 28 years up until the time of the sale run very successfully by the Harvey family. The bird collection and the 28 acre site have been bought by Denys E. Head Ltd., a family company which owns the garden centre adjacent to Birdworld. Mr Roger Head, the company's managing director was quoted as saying: 'We plan to continue developing Birdworld as the most prestigious bird park in the country.' Rob Harvey will have a continuing involvement with Birdworld in a consultative capacity.



## INCUBATION VIDEO

Rob Harvey is the author of the book *Practical Incubation*, a step by step guide to the latest techniques in artificial incubation. Now there is a video available also titled *Practical Incubation*. Both the book and video are obtainable from:- A.B. Incubators Ltd., P.O. Box 215, Moliner, Illinois 61266, USA. Tel: (309) 764-7701/Fax: (309) 764-7394. Advice about incubation is available from:- Rob Harvey, Kookaburra House, Gravel Hill Road, Holt Pound, Farnham, Surrey GU10 4LG, England. Tel: 01420 23986/Fax: 01420 23078.

\* \* \*

## TRACKING BUSTARDS

Cooperation between the United Arab Emirates and Kenya and Tanzania will help provide a valuable insight into the habits of two species of East African bustards, closely related to the Houbara Bustard *Chlamydotis undulata*, the traditional quarry of Arab falconers.

Following a visit to East Africa by members of the National Avian Research Centre (NARC), a project is underway to track Kori Bustards *Ardeotis kori* in Kenya, and plans are being made for a study of Denham's Bustard *Neotis denhami jacksoni* in Tanzania.

Two Kori Bustards captured and fitted with satellite tags during the visit to Kenya are being tracked by the NARC in Abu Dhabi, and information about their movements is being relayed back to the National Museum of Kenya. The birds were netted at night after being dazzled with a powerful spotlight, and the opportunity was also taken to collect blood samples which are being analyzed by NARC staff in the UAE.

Following the work in Kenya, Professor John Cooper, Programme Director at the NARC (and a member of the Avicultural Society), went to Tanzania for talks with wildlife organisations and the universities at Dar es Salaam and Sokoine. It is hoped that a six month pilot study into the status of Denham's Bustard will result from the talks and that, as in Kenya, the work will be a collaboration between the NARC and local institutions and individuals.

Proposals to establish links between the NARC and East Africa were first made two years ago, and aimed at using the NARC's expertise at satellite tracking to monitor movements of Kori Bustards in the great Rift Valley of East Africa. Battery-powered transmitters are attached to the backs of birds and the information collected by satellite yields valuable data about their migration and breeding patterns.

Gulf Today

\* \* \*

## MONTAGU'S HARRIER

Montagu's Harrier *Circus pygargus* is the subject of the first of a new series of monographs from Arlequin Press. The author, Roger Clarke, has during recent winters supervised a joint project between The Hawk and Owl Trust and the Bombay Natural History Society, studying the ecology of harrier roosts in India, which may at times contain as many as 2,000 of these birds, the great majority of them Montagu's Harriers.

\* \* \*

## NEW AVIARY FOR HORNBILLS AND ROLLERS

A large new aviary to re-house an adult pair of Trumpeter Hornbills *Bycanistes bucinator* and two pairs of Lilac-breasted Rollers *Coracias caudata* has been completed at Linton Zoo in Cambridgeshire. It measures 90ft x 30ft x 29ft (27.7m x 9.2m x 8.9m) at the highest point of the structure. Recent additions to the collection are Hawk Owls *Surnia ulula* and Sulphur-breasted Toucans *Ramphastos sulfuratus*.

\* \* \*

## ALF 'TIMBER' WOODS

News of the death of Alf Woods on 26th August 1994 was, perhaps as a result of an oversight, not included in the staff obituaries in the Zoological Society of London Annual Report for that year. As a result his death passed unnoticed by his former colleagues and older members of the bird keeping fraternity who remember him. His death came to notice earlier this year because it was thought that he was about to celebrate his 90th birthday. It would also have been 40 years since he retired from the zoo in 1956 - on the grounds of ill health. Prior to his retirement, 'Timber' as he was almost universally known, was Head Keeper of the Bird House. In 1954, he participated in the 'Zoo Quest to Sierra Leone', and hand-reared the first White-necked Picathartes or Guinea Rockfowl *Picathartes gymnocephalus* ever brought alive to Europe. He will also be remembered for allowing 'Baby', the famous Great Indian Hornbill *Buceros bicornis*, which lived in the Bird House for 32 years, to perch on his arm and gently take a grape from between his teeth.

\* \* \*

## HORNBILL LONGEVITY

What is the longevity record for a hornbill in captivity, and in particular for the Great Indian species *Buceros bicornis*? London Zoo's present oldest inhabitant is a female Great Indian Hornbill known as 'Josephine'. She and her partner (who died in 1960) arrived at the zoo 44 years ago from a circus at New Brighton, Cheshire. Earlier in 1996, she was reported to be 'celebrating her 50th birthday'.

## NEW ACCOMMODATION AT LORO PARQUE

In recent years the exhibition area at Loro Parque has seen an extensive modernisation of the aviary accommodation housing the world's most complete collection of parrots, which now has more than one million visitors each year.

In 1993, all of the *Amazona* species together with the Pesquet's Parrots *Psittichas fulgidus* and Hawk-headed Parrots *Deroptyus accipitrinus* were provided with new larger cages of an improved design. The following year was one of rapid development and saw several more areas of aviaries rebuilt, with the *Pionus* parrots, caiques (*Pionites* spp.), *Aratinga* conures and cockatoos all rehoused before the III International Parrot Convention was hosted at Loro Parque in September of that year. Further work continued in 1995, when the *Brotogeris* parakeets, *Enicognathus* conures, Thick-billed Parrots (*Rhynchopsitta* sp.) and all the smaller macaws were provided with new aviary accommodation.

In 1996, the Asian parrots and parakeets were relocated on land leading to the Dolphinarium. This included the fig parrots, *Psittacula* parakeets, *Tanygnathus* parrots and shining parrots (*Prosopeia* spp.). Other building work in 1996 has been largely dominated by the construction of the new breeding station on a plot of land situated some distance from Loro Parque, which was purchased and donated to the Loro Parque Foundation. This new breeding area will initially have about 350 breeding cages, ranging in length from 3m (9ft 9in) to 12m (39ft), and will be the first phase of the plan to relocate the majority of the breeding station to this new site, thereby allowing future expansion of the public area of Loro Parque.

With the breeding station nearing completion, the time has again come to move forward with the modernisation of the public area of the bird collection, this time concentrating on the collection of Australian parakeets. The new development will provide 26 aviaries to display a variety of *Neophema*, *Psephotus*, *Platycercus*, *Polytelis*, *Barnardius*, *Aprosmictus*, *Alisterus* and *Purpureicephalus* species. These new aviaries will be situated on the site of the old aviaries and an adjoining area not previously utilised. Work should begin in late November and be completed before the end of 1996, thereby providing the collection of Australian parakeets with new accommodation before the start of the 1997 breeding season.

As with all the redevelopment of aviary accommodation which has taken place in recent years, the building of the new aviaries for the Australian parakeets is designed to provide them with more flying space, more sunlight and a quieter environment, and with rows of plants between the aviaries. Plans are also in the pipeline to rehouse the African species and for a large aviary for Keas. The aim is to maintain the high standards at Loro Parque and to provide visitors with as complete an insight as possible into the Parrot family.



# The Avicultural Society

FOR THE STUDY OF BRITISH AND FOREIGN BIRDS  
IN FREEDOM AND CAPTIVITY

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## Cardinals, Saltators & Grosbeaks Seedeaters, Seed-finches & Grassquits

Robin Restall, author and illustrator of the recently published *Munias and Mannikins*, reviewed in this magazine, is now working on two new books, also to be published by Pica Press in the UK and Yale University Press in the USA. The first will cover the New World sub-family Cardinalinae, that is the cardinals, saltators, grosbeaks and *Passerina* buntings. The second will cover a group of New World emberizids, *Sporophila*, *Oryzoborus*, *Catamenia*, *Tiaris*, *Loxigilla* and *Loxipasser*. These handbooks will contain as much original personal observations (written and illustrated) as possible, and, like the *Munias* book will show every known plumage in colour. This means adult males of every race, and females, immatures and moults where distinct. There will also be a set of measured drawings of many individual birds. The distribution maps will show political boundaries, major river systems and probably key elevations.

Robin lives in Caracas where he has a large garden aviary and a small outdoor birdroom. He has a few *Sporophila* and *Oryzoborus* at the present, and is travelling extensively to make comparative field observations about these birds, many of which occur in Venezuela.

He would very much like to build a network of people interested in any of the species that are in the two groups described above, to exchange experiences, news and views. If you have seen *Munias* and *Mannikins*, you will understand how avicultural experience can provide invaluable insights into behaviour, and thus contribute to and enrich a handbook on birds. Every correspondent will be respected, and every contribution will be fully acknowledged in the printed work. Any aviculturist who corresponded with Robin during the development of the *Munias* book will vouch for the fact that this is a give and take offer.

Robin Restall can be contacted by mail %Aerocav 1330, P.O.Box 025304, Miami, FL 33102- 5304, USA. Fax: 58(2) 976 0152 e-mail: robirest897@cantv.net

\* \* \*

The President's Garden Party will take place Sunday, 22nd June 1997.



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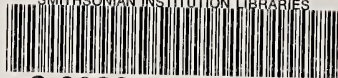


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